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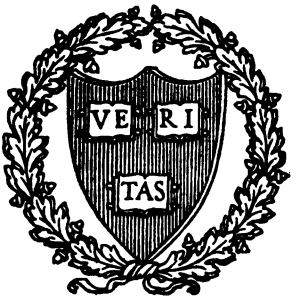
HARVARD UNIVERSITY



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WAR DEPARTMENT
CORPS OF ENGINEERS, U. S. ARMY

PORT SERIES—No. 1

THE PORT OF PORTLAND MAINE

PREPARED BY
THE STATISTICAL DIVISION
BOARD OF ENGINEERS FOR RIVERS AND HARBORS
A. H. RITTER
Chief Statistician

WASHINGTON
GOVERNMENT PRINTING OFFICE
1921

INTRODUCTION.

This report is the first of a series on the ports of the United States, prepared to meet the needs of the Government and shipping interests. The reports will describe port and harbor facilities for shipping, port charges, the railroads, the local conditions of transfer between rail and water, and also that of transportation between port and interior, other conditions governing the movement of traffic through the port, and such additional information as may be of value to operators of vessels, and to producers and manufacturers seeking the most economical outlets for their products. They will also show the facilities available for the handling and distribution of imports.

Among the important objects which it is hoped to attain by these reports is a more general appreciation of the benefits to be derived from proper development of our ports. Transportation is a service whose benefits are in proportion to its completeness. The absence of any one essential may prevent what should be an economical route or port from securing its commensurate business. The trouble may be the lack of adequate terminals, the absence of storage facilities, the imposition of excessive switching and wharfage charges, the lack of well-balanced cargoes and frequent sailings, insufficient channels, or other conditions affecting the movement of goods through the port and the ability of vessels frequenting it to earn a fair revenue.

In establishing shipping agencies, the manufacturer must consider every factor influencing the prompt and economical movement of his products. That traffic does not always follow the shortest or most logical routes is apparent, but it will often be found that there are sound reasons for this seeming disregard of economy. In order to attract business, a port must first provide the facilities essential for handling such traffic as is probable, and this requires a detailed study of production and consumption within the territory to be served by the port and the provision of equipment designed to meet the particular requirements of this traffic. It is equally important to study the needs of vessels calling at the port, and to provide the appliances and render the services which will permit a rapid turnaround. The railroad situation is frequently a controlling element in port development. Where possible, the complete control of all deep water frontage by the State or municipality, including the

ownership and operation of a belt-line railroad, connecting
rail lines and all terminals, is a practicable solution of this p
and is an effective remedy for many of the ills that now exist.

Finally, ports should not have to depend upon the good
selfish interests of either railroads or steamship lines to d
business. The railroads may prefer to have the business g
where and the water carriers rarely have the resources requi
undertake extensive operations designed to stimulate trade.
development of traffic should be regarded as one of the perm
functions of the port itself.

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
STATISTICAL DIVISION,
April 1, 1921.

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RS AND HARBOR

THE PORT OF PORTLAND, ME.

PORT AND HARBOR CONDITIONS.

GENERAL DESCRIPTION.

Portland, Me., is at the westerly end of Casco Bay and is the ost northerly and easterly port on the Atlantic coast of the United ates. It is 109 miles northeast of Boston, Mass., 52 miles north- st of Portsmouth, N. H., and 340 miles southwest of St. John, ew Brunswick, by the shortest usually traveled rail routes. The arbor is 3½ miles from the open ocean and 5 miles from Witch Rock, eyond which pilots do not go.

The harbor, considered as a whole, is made up of three parts:

(a) **The main or inner harbor,** known as Front Harbor, lying outh and east of the peninsula, and having a water front of about ½ miles; (b) Fore River, also on the southerly side of the peninsula, xtending westerly from the main harbor (from which it is separated by Portland Bridge), for about 1⅓ miles; (c) Back Cove, which lies on the northerly side of the peninsula, nearly landlocked, pproximately circular in form, about 1 mile in diameter and having narrow bottle-necked entrance. It has a water front of about 1¾ miles. The total water frontage of the harbor, inclusive of South Portland, is about 8½ miles.

The outer harbor of Portland, which is used as a harbor of refuge, is situated behind the islands of Casco Bay. The main ship channel to Portland Harbor is the deep-water entrance between Cushing Island on the east and the main shore at Portland Head on the west. There are several other entrances between the islands, used by local vessels or those towing from Portland to different points in Casco Bay and its estuaries. A ledge of rock exists in the vicinity of Cape Elizabeth, but this ledge is well marked and is not regarded as a serious menace to navigation.

TIDES.

The mean range of tide is 8.9 feet, and the spring range 10.2 feet. In 1909 there was a tide of 13.3 feet. Tides of 11 feet are not uncommon. The effect of strong winds, in combination with the regular

tidal action, may at times cause the water to fall below the plane of reference of the chart, mean low water; the lowest level observed below the plane of reference at Portland is −4.5 feet. The water has been known to rise about the same amount above mean high water, due to similar causes.

Tidal currents exist principally near the bridges, but their velocity never exceeds 2 miles per hour and they rarely impede navigation. At Portland light vessel the tidal current is weak, being on an average less than ¼ knot; during October, November, and December there is a southerly set of about ½ knot.

ANCHORAGES.

The principal anchorage basin lies off the easterly end of the city, north of Fort Gorges, with an area of about 5,575,680 square feet. The water depths at this anchorage vary from 30 to 45 feet. Other anchorages are in Diamond Island Roads, southeast of Fort Gorges, and in the channel below Spring Point Ledge Light, this latter, however, having less favorable holding ground than the other anchorages. There is also a limited anchorage on the South Portland side of the main channel. The total anchorage area is about 6,534,000 square feet. Anchorages are well sheltered. See Port Customs and Regulations for rules respecting anchorages.

WEATHER CONDITIONS.

The prevailing winds are southwesterly during the summer and northerly during the winter. At all seasons the heaviest gales are generally from northeastward or eastward.

Ice seldom obstructs navigation and when it does it is only for a limited period. The channel to the wharves is kept open by steamers and tugs.

Fogs are encountered along this coast during the summer months. They occur most frequently during June, July, and August, and the months of May and September are not free from them. At the head of bays and within rivers it is often comparatively clear when it is thick outside. Winds from east to southwest by way of south bring in fog; westerly and northerly winds clear it away.

The following shows the average number of hours per month from a record of about six years that the fog signals at Portland were operated:

Hours of operation of fog signals.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Portland light vessel.	57	75	49	78	56	62	88	79	99	46	37	57	783
Portland Head.....	73	87	56	78	63	59	122	83	98	48	40	55	862

The mean annual **temperature,** covering a period of 48 years, is 45.4° Fahrenheit. During 1919 the maximum temperature was 98° on July 4 and the minimum −10° on December 18.

There is no regular **rainy season.** The mean annual precipitation is 42.63 inches. During 1919 the total precipitation was 37.25 inches.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
Mean Maximum Temperature.												
30.1	31.6	39.3	50.5	61.2	71.0	76.5	74.1	67.5	56.6	44.8	34.0	53.2
Mean Minimum Temperature.												
14.8	15.9	25.1	35.4	45.6	54.5	60.2	58.8	52.2	42.0	31.7	20.2	38.1
Maximum Wind Velocities and Direction, Years 1872–1917.												
56 SE.	61 SE.	60 x	50 NE.	43 E.	40 E.	40 SE. and N.	48 SE.	50 NW.	52 S.	50 SE. and S. and E.	60 SE.	61 SE.
Direction of Prevailing Wind.												
NW.	NW.	NW.	NW.	S.	S.	S.	S.	S.	NW.	NW.	NW.	
Mean Precipitation, Inches.												
3.76	3.45	3.89	3.23	3.56	3.27	3.47	3.55	3.31	3.70	3.67	3.77	42.63

HEALTH CONDITIONS.

The health conditions of the harbor are good, and there is no season when unsanitary conditions prevail.

BRIDGES.

Fore River is crossed by four bridges, as follows:

Portland Bridge, which is nearest the mouth of the harbor, is a highway and street-railway bridge with a single opening 100 feet wide and a headroom of about 30 feet at high water when closed; it is opened to vessels on signal between 5 a. m. and 7 p. m. from October 1 to April 1, and between 4 a. m. and 8 p. m. from April 1 to October 1, and at other hours on notification to the draw tender.

Boston & Maine lower bridge is one-fourth mile above Portland Bridge. It has a center pier draw, both openings 60 feet wide, and a headroom of 6 feet at high water when closed.

Vaughan Bridge, 1⅛ miles above Portland Bridge, has a center pier draw, both openings 60 feet wide, and a headroom of 5½ feet at high water when closed; it is opened on a signal of five blasts at any time on week days between 7 a. m. and 5 p. m. from October 1 to April 1, and between 6 a. m. and 6 p. m. for the remainder of the year, and on Sunday or at other hours on previous notice to the draw tender.

The upper Boston & Maine Railroad bridge is 1¼ miles above Portland Bridge and has a swing draw with a single opening 40 feet wide.

The entrance to Back Cove is crossed by two bridges, as follows:

Grand Trunk Railroad bridge has a center pier draw with a single opening 88 feet wide and a headroom of 5½ feet at high water when closed.

Tukey Bridge is a center pier draw with one clear opening 67 feet wide and a headroom of 5 feet at high water when closed.

HARBOR IMPROVEMENTS.

The improvement of Portland Harbor by the United States was initiated in 1836, when Congress authorized the construction of a breakwater on the southerly side of the harbor entrance. This breakwater is 1,900 feet long and affords protection to the wharves and channel in the lower part of the harbor.

The existing project for improvement of the harbor by the United States provides for the removal of two ledges in the main ship channel to a depth of 40 feet at mean low water; for a channel 35 feet deep at mean low water from deep water to above the wharves of the Grand Trunk Railway, with a depth of 30 feet in Fore River up to the upper Boston & Maine Railroad bridge; for a 30-foot anchorage area off the easterly end of the city, and a channel 30 feet deep from this anchorage to the Grand Trunk bridge at the mouth of Back Cove, 14 feet deep from the bridge to Tukey Bridge, and 12 feet deep to the head of Back Cove. On June 30, 1920, all of this work had been completed except the removal of the two ledges in the main ship channel.

The controlling width of Front Harbor is 1,100 feet and the controlling depth up to Franklin Wharf is 35 feet at mean low water. Above Franklin Wharf there is a channel depth of 30 feet. There is no bar at the entrance to this harbor. The channel to Back Cove has a depth of 30 feet at mean low water up to the Grand Trunk Railway bridge. The main channel depths are sufficient for large freight vessels, and the port is used to a considerable extent by trans-Atlantic liners, drawing from 26 to 34 feet, which call at the wharves of the Grand Trunk Railway.

OWNERSHIP OF WATER FRONT.

There are no publicly owned wharves on the main harbor front of Portland, but a wharf for handling bulk material is now being constructed on Back Cove. To insure the future growth of the port and provide the facilities needed for commerce originating in or destined for points in northern New England, the acquisition of an adequate deep water frontage by the State of Maine, or the city of Portland, and the construction thereon of modern facilities for handling traffic are indispensable.

TERMINAL IMPROVEMENTS.

The river and harbor act of August 8, 1917, which adopted the 35-foot project requires that assurances shall be given that adequate berthing space for deep-draft vessels, affording a depth of not less than 35 feet at low water of spring tides, shall be provided by local interests within a reasonable time. These assurances were given and received the approval of the Secretary of War August 27, 1917. The Maine Harbor Commission has approved a plan for the construction of a public State pier at an estimated cost, including site, of $1,500,000. The pier, as proposed, is to be 1,000 feet long and will be located on the site now occupied by Galt and Franklin Wharves. The site has been purchased and a bond issue is now being made to finance the construction of the pier. Before selecting the site the harbor commission requested the advice of the Board of Engineers for Rivers and Harbors, and a committee of the board visited Portland for this purpose.

PORT ADMINISTRATION.

The control of the harbor is vested in a State board known as the Commissioners of Harbor and Tidal Waters of Portland. The board consists of four commissioners, who are appointed by the governor for a term of three years. The examination and licensing of pilots are under the control of the board, but port wardens are chosen by the Portland Chamber of Commerce, through the governor.

PORT CUSTOMS AND REGULATIONS.

FEDERAL ACTS AND REGULATIONS.

General regulations.—The port is open from 7 a. m. to 6 p. m. Vessels may discharge cargo before sunrise and after sunset only upon issuance of special permit by customs office. Vessels are visited at anchorage for quarantine or sanitary inspection. Vessels may clear between the hours of 7 a. m. and 6 p. m. Clearance is effected by agents or masters.

PUBLIC HEALTH SERVICE.

Quarantine.—A new quarantine station has recently been completed on House Island, and vessels subject to visitation do not go above until they have been granted pratique.

CERTIFICATE OF DISCHARGE FROM NATIONAL QUARANTINE.

UNITED STATES QUARANTINE STATION,
PORT OF .....,
....., *19*...

I certify that the ..... of .....,
from ..... bound for .....,
has in all respects complied with the quarantine regulations prescribed by the Secretary of the Treasury, and that the vessel, cargo, crew, and passengers are, to the best of my knowledge and belief, free from quarantinable diseases or danger of conveying the same. Said vessel is this day granted free / provisional pratique.

1. Rat guards of an accepted design to be placed on all lines leading from the vessel.
2. Gangways to be raised at night or lighted and watched.
3. Vessel to be fumigated after discharge of cargo.

....., *Surgeon.*

Hospitals.—The marine hospital is at the mouth of the Presumscot River, 1 mile from the city. The hospital is in charge of an officer of the United States Public Health Service.

Maine General Hospital, Arsenal Street.

Eye and Ear Infirmary, Arsenal Street.

Several private hospitals.

Purchase of narcotic drugs.—As authorized by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, opium or coca leaves, their salts, derivatives, or preparations, coming within the purview of act of Congress approved December 17, 1914, may be purchased for stocking medicine chests and dispensaries maintained on board both ocean-bound vessels and vessels

engaged in trade between ports of the United States (provided there is no physician registered under the provisions of said act employed on board the same) and vessels belonging to the various departments of the Government, upon the approval of commissioned medical officers and acting assistant surgeons of the United States Public Health Service. If a physician, registered under the provisions of the above act of Congress, is employed on board a vessel, said medical supplies may be purchased only upon his order.

IMMIGRATION SERVICE.

EXTRACT FROM IMMIGRATION ACT OF FEBRUARY 5, 1917.

SEC. 36. That upon arrival of any vessel in the United States from any foreign port or place it shall be the duty of the owner, agent, consignee, or master thereof to deliver to the principal immigration officer in charge of the port of arrival lists containing the names of all aliens employed on such vessel, stating the positions they respectively hold in the ship's company, when and where they were respectively shipped or engaged, and specifying those to be paid off and discharged in the port of arrival; or lists containing so much of such information as the Secretary of Labor shall by regulation prescribe; and after the arrival of any such vessel it shall be the duty of such owner, agent, consignee, or master to report to such immigration officer, in writing, as soon as discovered, all cases in which any such alien has illegally landed from the vessel, giving a description of such alien, together with any information likely to lead to his apprehension; and before the departure of any such vessel it shall be the duty of such owner, agent, consignee, or master to deliver to such immigration officer a further list containing the names of all alien employees who were not employed thereon at the time of the arrival but who will leave port thereon at the time of her departure, and also the names of those, if any, who have been paid off and discharged, and of those, if any, who have deserted or landed; and in case of the failure of such owner, agent, consignee, or master so to deliver either of the said lists of such aliens arriving and departing, respectively, or so to report such cases of desertion or landing, such owner, agent, consignee, or master shall, if required by the Secretary of Labor, pay to the collector of customs of the customs district in which the port of arrival is located the sum of $10 for each alien concerning whom correct lists are not delivered or a true report is not made as above required; and no such vessel shall be granted clearance pending the determination of the question of the liability to the payment of such fine, and, in the event such fine is imposed, while it remains unpaid; nor shall such fine be remitted or refunded: *Provided*, That clearance may be granted prior to the determination of such question upon deposit of a sum sufficient to cover such fine.

REPORT OF SHIP'S SURGEON—INSTRUCTIONS.

To masters and medical officers of ships and others concerned:

Under the authority of section 22 of the act of Congress approved February 20, 1907, it is hereby directed that on the arrival of a ship bringing passengers from a foreign port to any port of the United States, the ship's surgeon shall deliver in person to the United States Commissioner of Immigration, or his authorized representative, a complete report of the diseases (including manifestations of epilepsy, hysteria, or insanity), injuries, births, and deaths which have occurred among the passengers during the voyage.

Said report shall state in each instance the name of the passenger concerned; whether a first cabin, second cabin, or steerage passenger or a stowaway; the letter or number

used to designate the sheet of the passenger manifest on which the said passenger's name is to be found, and the number indicating the position of his name on said sheet; the nature of the disease or injury from which he is or has been suffering and his actual condition at the time of arrival (e. g., "improved," "recovered," "moribund," "dead").

Under the heading "Remarks" the ship's surgeon will make such notations as "Able to travel," "Accompanied by family," "Removed at quarantine," "Removed at quarantine with family," "In ship's hospital," or other remarks which may be of assistance to the United States immigration officers in protecting the welfare of the sick or in accounting for missing passengers.

Diagnoses and all other statements appearing in said report must be written legibly, but need not be in English, if the ship's surgeon be more familiar with another language. The ship's surgeon shall furthermore declare on oath that to the best of his knowledge and belief his report, as herein prescribed, comprises a true and complete statement of all the diseases, injuries, births, and deaths which have occurred during the voyage.

The commissioners of immigration at the various ports of the United States have full authority to prevent the debarkation of the passengers from a ship until the ship's surgeon, or, in lieu thereof, the master of the ship, shall have furnished a medical report, as above indicated.

CUSTOMS SERVICE.

The customhouse is on the water front opposite the customhouse wharf and convenient to the upper steamship and railroad terminals. It is open from 9 a. m. to 4.30 p. m., daily except Sundays, national holidays and, as far as the transaction of public business will permit, on State holidays and half holidays. The working hours of operating and discharging inspectors are from 7 a. m. to 6 p. m., with one hour for lunch. Night inspectors work at least eight hours. Practically all freight for customs warehouses is trucked or drayed from the piers. If goods are entered for immediate consumption, they may be hauled from the pier by the importer or his agent upon the issuance of the proper permit by the customs office, which is duly surrendered to the inspector in charge of the merchandise. If the goods are held in bond at customs warehouses, permits signed by the collector and naval officer, showing that all charges due the Government have been paid, and presented to the storekeeper at the warehouse, will secure delivery.

Cartmen or lightermen holding customs licenses and transporting freight to bonded warehouses give receipts on proper customs form to vessel or other common carrier for all packages or merchandise in bulk delivered to them.

The average cargo handled per day by customs is 600 tons.

The following classes of merchandise require special documents, examination or analysis before entry is permitted:

Foods, drugs, insecticides, and fungicides.
Meat and meat food products.
Plants and nursery stock.
Seeds adulterated or unfit for seeding purposes.

Viruses, serums, and toxins for treatment of man; also domestic animals.
Animals, hides, feedstuffs, and rags.
Teas, sugar, fur skins, birds' eggs.

The importation of white phosphorus matches is prohibited. Wild animals, insects, birds, plumage, and opium are admitted only when the special conditions contained in the customs regulations are met.

The customs inspectors or guards keep close surveillance over the cargo from the time the ship berths until it is deposited in the bonded warehouse and the likelihood of loss is, therefore, small. If loss or damage occurs between time of discharge and delivery to vehicle, the steamship company is liable. If loss or damage occurs between pier and warehouse, the drayman is responsible and he is required to furnish a $5,000 bond to the Government to cover such contingencies.

FEDERAL DOCUMENTS.

The following is a list of documents required by Federal regulations:

Public Health Service:
- Certificate of discharge from national quarantine.
- Purchase order for narcotic drugs supplied to vessels.

Immigration Service:
- Seaman's identification card.
- Statement of master of vessel regarding changes in crew prior to departure.
- Report of ship's surgeon.
- Descriptive list of Chinese seamen arriving at port.
- List or manifest of aliens employed on the vessel as members of crew.
- List of United States citizens arriving at port.
- List or manifest of alien passengers arriving at port.
- List or manifest of outward bound passengers (aliens and citizens).

Customs:
- Inward foreign manifest.
- Outward foreign manifest.
- Coasting manifest.
- Master's oath on entry of vessel from foreign port.

Bureau of Navigation:
- Crew list.
- Shipping articles.

LOCAL REGULATIONS.

The following local regulations have been prescribed for Portland Harbor. The harbor master has charge of the enforcement of the regulations.

AN ACT ESTABLISHING RULES AND REGULATIONS FOR PORTLAND HARBOR.

Be it enacted by the people of Maine, as follows:

SECTION 1. No owner, master, pilot, or other person having charge of any vessel, and no owner, master, pilot, or other person having charge of any vessel towing or otherwise conducting another vessel to anchorage in the harbor and bay of Portland,

shall place such vessel in anchorage in said harbor or bay in any anchorage ground other than that hereinafter described, and all persons shall conform to the following rules and regulations:

SEC. 2. Vessels not exceeding five hundred tons burden may be anchored on the southerly side of the line ranging with the white buoy off the breakwater, and a white buoy on a westerly course, thence on a line ranging with said white buoy and the draw pier of Portland Bridge, but not west of a line drawn from the northerly end of the slip of the Portland & South Portland Ferry, Portland, to the northerly end of said ferry company's wharf at South Portland.

Vessels of larger tonnage may also be anchored on the above-described grounds, provided the anchorage grounds designated for such vessels shall be crowded, but not so as to obstruct the free entrance or egress of regular lines of steamers to or from their docks on the northerly side of the harbor.

SEC. 3. Vessels not exceeding one hundred and fifty tons may anchor to the west ward of above lines drawn from northerly end of the ferry wharves and south of line ranging from the white buoy above mentioned with southeasterly end of draw of Portland Bridge.

SEC. 4. Vessels exceeding five hundred tons shall be anchored easterly of a line drawn from the southeasterly end of the Portland Company's wharf as now built and the westerly end of the Bay View Wharf at Peaks Island. The line shall be marked by three white buoys.

SEC. 5. Vessels anchoring within above-described limits must anchor entirely within said boundaries so that no portion of the hull, spars, or booms shall extend beyond said boundaries after veering chain or when riding to the tide.

SEC. 6. Permits may be granted by the harbor master of the city of Portland to wrecking plants to anchor outside of the above limits for the purpose of recovering sunken property subject to his supervision. Such plants must comply with all the navigation laws in regard to lights, fog signals, and other requirements, and must move in ample season to give safe and clear passage to arriving and departing regular lines of steamers.

SEC. 7. Vessels may be anchored south of a line ranging with the Spring Point Lighthouse and the white buoy off the breakwater.

SEC. 8. All vessels at anchor in the harbor shall display a distinct white light forward not less than six feet above the forecastle deck during the night. All vessels at anchor shall keep their foresails and jibs furled during the night. Anchor watch shall be kept and fog signals sounded in fogs or thick weather.

SEC. 9. Vessels ordered to quarantine shall be anchored on the northeasterly side of a line ranging with the United States marine hospital and Fort Gorges, which anchorage shall be designated as the quarantine anchorage.

SEC. 10. All steamers passing up and down the harbor, near the ends of the wharves, shall run at a slow rate of speed.

SEC. 11. Vessels lying across the end of a wharf and projecting over to obstruct free passage to adjoining wharves or docks must move when necessary, to allow free passage to such docks. All vessels lying across ends or at sides of wharves must have their anchors cathead or hawse pipes and booms hauled in and boats at davits hauled inboard.

SEC. 12. Vessels lying at the sides of wharves, so as to obstruct the passage to adjoining wharves, or to the same wharf, must move when necessary to accommodate other vessels entering or leaving the docks.

SEC. 13. Light vessels lying alongside of a wharf and not taking in or discharging cargo, must make way for, and permit other vessels that want to load or unload cargo, to come inside next to the wharf.

SEC. 14. No warp or line shall be passed across a channel or dock so as to obstruct vessels passing along same.

SEC. 15. If any vessel occupying a berth at any wharf, either with or without the consent of the wharfinger or owner thereof, shall fail to vacate such berth upon notice from such wharfinger or his agent, to the master of those having such vessel in charge for the time being, in a reasonable time, to be adjudged by the harbor master, the harbor master shall then cause such vessel to be moved to some other berth, or proper anchorage at the risk of owners of the vessel, the expense thereof to be paid by the owners of said vessel.

SEC. 16. No vessel shall make fast or lie to the end or side of any wharf where such action shall interfere with the free access to or departure from an adjoining dock of any regular line of steamers or ferry boat, when notice forbidding such making fast or lying moored shall have been given by signs or other displayed notice.

SEC. 17. No vessel shall be anchored in Portland Harbor so as to obstruct the free passage of the regular lines of steamers running to and from this port, the island steamers, the ferry boats or the entrance to the marine railway.

SEC. 18. No person shall throw, sweep or cause to be thrown or swept into the waters of Portland Harbor or into the waters adjacent thereto any ashes, dirt, stones, gravel, mud, ballast, logs, planks or any other substance tending to obstruct the navigation of said harbor or water adjacent thereto or to shoal the depth of said harbor or pollute the waters thereof.

SEC. 19. The harbor master of the city of Portland shall have authority to move or direct the moving of any vessel at anchor in the harbor or moored at any wharf or dock in violation of above rules, and such vessels shall be moved at the risk and expense of said vessel or of the owner or owners of said vessel.

SEC. 20. Whoever violates any of the provisions of this act or refuses to obey the lawful orders of the said harbor master or resists him in the execution of his duties shall be punished by a fine of not less than twenty dollars, or by imprisonment for not more than thirty days, or both.

SEC. 21. The three buoys defining the anchorage in the lower harbor shall be on a line drawn from the Portland Company's wharf in Portland to Bay View Wharf, Peaks Island. The most easterly buoy A to lie three hundred yards northeasterly of House Island; the next buoy B to lie eight hundred and seventy-five yards west-northwest from A; buoy C to lie twelve hundred and fifty yards west-northwest from B and be seven hundred yards northeast five-sixteenths east from Portland Breakwater Lighthouse. The three buoys defining the anchorage in the upper harbor shall be on a line drawn southwest by west one-half west through the draw pier of Portland Bridge. The upper one of these buoys, F, to lie on this latter line at a distance of nine hundred and fifty yards by northeast by east one-half east from the draw pier above named; the next buoy, E, to lie on the same line six hundred yards from buoy F, the third buoy D, to lie on the same line six hundred yards from buoy E.

EXTRACTS FROM RULES AND REGULATIONS OF THE MAYOR AND ALDERMEN RELATING TO GUNPOWDER.

SEC. 4. No person shall haul into or lay at any wharf, bridge, or other landing place in the city, or bring within two hundred yards thereof, any boat or vessel having on board any quantity of gunpowder, dynamite, or other such dangerous explosives, exceeding twenty-five pounds, or land from or receive on board any boat or vessel, at any such wharf, bridge, or landing place, any such dangerous explosives exceeding the amount aforesaid, without obtaining a permit from the chief engineer of the fire department and no boat or vessel with gunpowder, dynamite, or other such dangerous explosives on board in quantity, exceeding twenty-five pounds, shall remain at any wharf, bridge, or any other landing place in the city more than six hours; nor shall any such boat or vessel be allowed to ground at any such place, or remain there after sunset.

PORT AND HARBOR FACILITIES.

PIERS, WHARVES, AND DOCKS.

The harbor has a water front of about 8½ miles, rather more than one-half of which has been developed. There are 46 wharves, all but 10 of which are in the city of Portland. Seven wharves are used for transportation terminals, 14 for coal and lumber, 8 for manufacturing purposes, 4 for marine construction, and the remainder for general business.

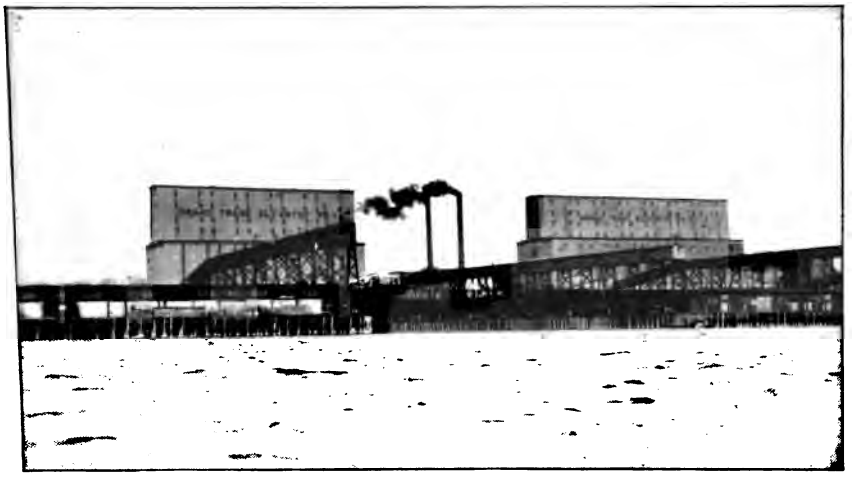
There are two publicly owned ferry landings, besides which the city of Portland has a wharf in Back Cove under construction, which, aside from municipal use, will be open to the public. Seventeen of the private wharves are open to the public upon equal terms. Twenty-five have mechanical appliances. Thirty have physical connection with railroads and in the cases of 14 others, railroads run either to the heads of the wharves or adjacent thereto. Five of the wharves have a depth alongside of 6 feet or less at mean low tide, 22 have from 10 to 15 feet, 5 from 16 to 20 feet, 5 from 21 to 25 feet, 5 from 26 to 30 feet, and 3 have 33 to 35 feet. One berth is bare at mean low tide.

Many of the wharves are of solid fill within stone walls and with wooden pile extensions, while most of the larger ones are built entirely on piles. The transportation terminals are efficient, but in some respects are not of sufficient capacity to handle the class of vessels offering. The coal wharves are efficient, though somewhat crowded for room in one or two instances. Most of the remaining commercial wharves are of considerable size, but are of an old type with shallow berths and are not very serviceable. While existing facilities accommodate the present commerce, need for betterment is evident. There is abundant space, but to increase terminal facilities it will be necessary to revise and rebuild a portion of the old system.

Beginning at the eastern end of the city on the main harbor front are the remains of two wharves known as the **Great Eastern Wharves.** These are in disrepair and are not available for any practical use. They are quite exposed and are difficult of land approach.

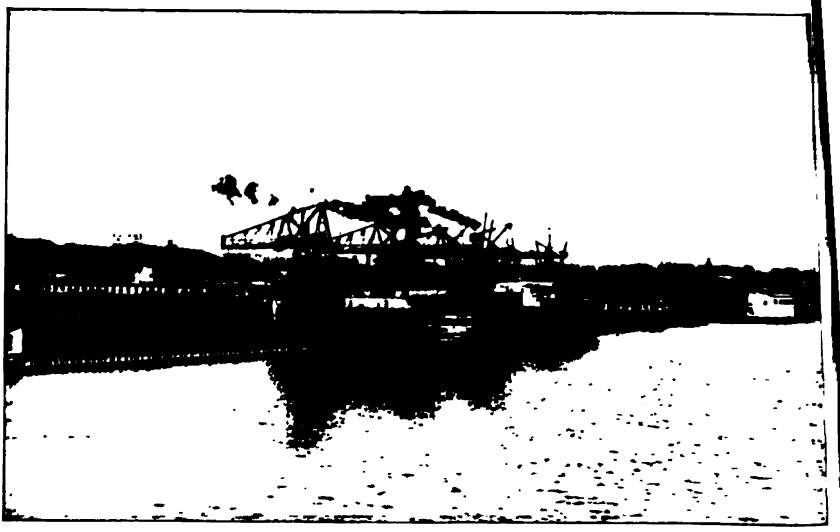
The next wharf, the **Portland Co.'s wharf,** stands back from the harbor line and is used only for repairing small vessels.

The next three wharves are excellent and belong to the **Grand Trunk Railway system.** They are about 500 feet in length and are used for both passenger and freight traffic. They are of pile platform construction, in uniformly good condition, affording, by means of six slips, a dockage of about 3,000 feet and by using the



GRAND TRUNK WHARVES, PORTLAND, ME.

INSHORE END OF GALLERIES, GRAND TRUNK WHARVES, PORTLAND, ME.



PORTLAND TERMINAL NO. 1, PORTLAND, ME.

PORTLAND TERMINAL NO. 3, PORTLAND, ME.

berths across the ends of the piers this is increased to about 4,000 feet with an available depth of 33 to 35 feet at mean low tide in the slips. Package freight is handled by ship's winches and booms and by two-wheeled hand trucks on the piers. This method, in so far as it relates to the handling of freight on the pier itself, is slow, wasteful of labor, and expensive, but the installation of modern freight-handling machinery has been regarded as of doubtful expediency in view of the fact that the piers are in use only about 6 months each year. There are two derricks with a capacity of 2½ tons each. There are eight steamship sheds, total area 219,177 square feet, with a capacity of 20,000 tons or about 175 pounds per square foot. The bulk freight handled at these piers consists of outbound grain for which the loading facilities, comprising elevators, conveyors, and discharging chutes, are of high efficiency. There are two elevators having a joint capacity of 2,300,000 bushels. Unloading from cars to elevators averages 140 cars per day of 10 hours. The average delivery capacity from elevator to steamships is 10,000 bushels per hour over each delivery belt and five belts can be used at one time.

The fourth, known as Galt Wharf, is the most westerly of the **Grand Trunk piers.** It is an uncovered pile platform, the greater part of which is in good condition. This pier is used almost exclusively for the transshipment of copper ore from rail to water carriers. It is provided with a raised platform, the top of which is at the level of the car floors and with hinged loading stages, but has no mechanical appliances, the ore being loaded on barrows at the cars, wheeled by hand across the platform onto the stages and dumped into the hold of the vessel or barge lying alongside. From 5,000 to 10,000 tons of this ore are handled per month. The facilities afforded at this pier are crude and the method of ore handling is slow and expensive, but more modern methods are probably not justified by the present volume of traffic.

Franklin Wharf which comes next is used by the Eastern Steamship Lines. All the boats of this company land here and conditions are very congested. Galt and Franklin Wharves have been purchased as a site for the new State pier.

The next wharf is occupied by **Randall & McAllister Co.** in an extensive coal buisness. This is a good wharf with fair depth but the owners are badly in need of more room.

Customhouse Wharf next above is a good wharf, but without great depth of water.

Portland Pier, the next above, is much used for local traffic and has a ferry slip with a public landing for small boats at the head of the dock. There is good water at the outer end but the inner ends of the docks are shoal.

Long Wharf is occupied chiefly by the Pocahontas Fuel Co. It has facilities for bunkering small vessels directly from the wharf, but the bunkering of large vessels is done by lighters.

From this pier to Portland Bridge, with one or two exceptions the wharves are old and the slips very shallow so that they can not be used by vessels of the larger type. Many of the wharves are 1,000 feet and upward in length, but it would be unsafe to attempt to deepen the docks without rebuilding the wharves.

Immediately below and above Portland Bridge the **Portland Terminal Co.** has excellent wharves, the fronts of which are dredged to 30 feet at mean low tide. They are used principally for handling bulk freight, including particularly bituminous coal. There are piers with a joint capacity of about 5,800 tons per day. Wharf No. 1 is immediately east of Portland Bridge and is used for coal and sulphur. There is a double railroad track along its face, spanned by four movable steel gantry cranes of the type familiar on the Great Lakes. The clamshell buckets dump into hoppers having chutes immediately above the tracks, and coal is unloaded from vessel directly into cars, at the rate of 150 tons per hour for each tower. There is no transit shed on this wharf, as it is devoted entirely to bulk cargo, but three of the tower arms extend over a shed used by the Union Sulphur Co. for the storage of sulphur, permitting direct unloading from vessel to storage. Wharf No. 2 is just west of Portland Bridge, and is used for coal only. There are no transit sheds or other structures. There are two movable frame towers of old type, having a reach of about 40 feet. These towers have a capacity of about 50 tons per hour each. Wharf No. 3 is just above the Eastern Division bridge, and is used for wood and clay exclusively. There are no sheds. The wharf is equipped with four movable frame towers, having a reach of about 30 feet, and a capacity of 25 cords of wood per hour each. Clay is unloaded by steamship's winches. The upper wharf south of the Western Division bridge is used for coal only, and has covered storage for 4,000 tons. There is a stationary tower of old type. The Portland Terminal Co. also owns the old Boston & Maine wharf on Commercial Street, and this is now occupied by several concerns for various business purposes.

Returning to the eastern end of the city after passing the wharves of the Portland Co., practically the entire front to the Grand Trunk bridge is controlled by the Grand Trunk Railway and is undeveloped. Following the shore of Back Cove on the Portland side, practically the entire front is in the hands of the railroads and little has been done except in the way of developing railroad freight yards. At the head of Back Cove there is a large factory which uses quantities of coal, clay, etc., and a power house belonging to the local light and power company.

Detailed information regarding the wharves is given in the following tables:

wharves, moles, and dock

AND FRONT HARBOR,

	Floor capacity (pounds per square foot).	Na...ly. syst... 30.)	Fire protection. (See also page 32.)	Electric current. (See also page 33.)	Remarks.
...boutas... ...y from th... ...rs. ...e or tw... ...so that ...t be- ...of the ...loors ...). ...e unsa... ...ves. ...idge th...					
...f which ...		Non... Gr... pa...	Hydrants connected to city supply; city fire boat.	110-volt lighting circuit; 3-phase, 60-cycle, 220-volt, alternating current. Power circuit.	Wharf stands back from harbor line; it is in good condition and efficient for its purpose; total area of property, 39,630 square feet.
...per c... 20	175	All ... con- pi... city wi... ys... Tr...	Monitor system...	110-volt lighting circuit from own plant.	Wharf in good condition; extension contemplated; total area of property, 417,929 square feet. (See Grain elevators.)
...d is ...					
...g its ...					
...e fam...					
...hoppe...					
...s unlo...					
...er ho... 20	175	...	...do...	...do...	Wharf in good condition; extension contemplated; area, 182,400 square feet.
...as it ...					
...s exte... 20	175	All ...	...do...	...do...	Wharf in good condition; extension contemplated; area, 192,100 square feet.
...age ...		pi...			
...Whar...		wi...			
...ly. ...		ys...			
...mov...		Tr...			
...The...		se...			
...Wharf ...		of...			
...		st...			
...for w...		ni...			
...equip...		tr...			
...0 fee...		Tr...			
...		er...			
...		All ...	City fire service and fire boat.	Lighting circuit...	Wharf kept in good condition; not used as much as other Grand Trunk wharves; total area of property, 213,436 square feet.
...unkn... 10	Unknown ...	...	...do...	...do...	Wharf in good condition; there is a paved roadway on the wharf; total area of property, 209,959 square feet. This wharf and Galt wharf have been purchased as a site for the State pier.
...ter...					
...r 4...					
...ern...					
...Str...		Non...	City fire service and fire boat.	None...	Wharf in good condition; total area of property, 45,441 square feet.
...s pu...					
...this					
...ed.					
...and... 10–20	1,000	Spu...	City fire service...	110-volt lighting circuit.	Wharf in good condition; firm occupying wharf makes specialty of bunkering ships; total area of property, 92,879 square feet.
...ver...		wi...			
...ro...		tr...			
...he...		Tr...			
... 10	Unknown.	Non...	...do...	110-volt lighting circuit; 3-phase, 6-cycle, 220-volt, alternating current.	Wharf in good condition and fairly efficient; has a broad roadway down the center; total area of property, 220,910 square feet. Wharf also used by following concerns: W. S. Jordan & Co., Brewer & Co., Williams Bros. Co., Maine Electric Welding Co., N. F. Trefethen Co., Lobsters, Burton Steamship Co., West End Dairy Co.
...		tr...			
...		T...			
...		pa...			

Sheds.		Supply. (See page 30.)	Fire protection. (See also page 32.)	Electric current. (See also page 33.)	Remarks.
Height between floors (feet.)	Floor capacity (pounds per square foot).				
.....	.....	ice.....	City fire service...	110-volt lighting circuit; 3-phase, 60-cycle, 220-volt, alternating current; electric service.	Wharf in good condition and fairly efficient; much freight is handled by hand; there is paved roadway on the structure; total area of property, 143,778 square feet. Wharf is also used by following concerns: Howard & Horn, Palmer Bros., Flaherty Fish Co., City of Portland, U. S. Engineer Office, U. S. Quartermaster Corps, L. B. Griffin & Co., C. T. Sweet Co.
.....	.....	.....	.....do.....	110-volt lighting circuit; 3-phase, 60-cycle, 220-volt alternating current.	Wharf in fair condition, total area of property; 147,436 square feet.
ge shed.					
10–20	Unknown.....	.....	.....do.....	110-volt lighting circuit.	Wharf in good condition; total area of property, 203,637 square feet.
.....	.....	.....	.....do.....	.....do.....	Wharf in good condition; total area of property, 276,547 square feet.
.....	.....	1	.....do.....	.....do.....	Fair condition; total area of property, 149,556 square feet.
10–20	Estimated. 1,0	ice.....	City fire service...	110-volt lighting circuit.	Wharf in fair condition; roadway down center of wharf; total area of property, 249,856 square feet.
s a transit shed.					
.....	.....	.....	.....do.....	.....do.....	Wharf in good condition; total area of property, 203,012 square feet.
.....	.....	.....	.....do.....	.....do.....	Wharf in fair condition; limited length of slips hampers use for shipping purposes; total area of property, 211,146 square feet.
.....	.....	.....	.....do.....	.....do.....	Wharf in fairly good condition; westerly slip is very narrow; total area of property, 121,737 square feet.
.....	.....	.....	.....do.....	.....do.....	Wharf in good condition and is one of the longest and largest on the water front; total area of property, 225,195 square feet.

ds.					
ght be-n floors eet).	Floor capacity (pounds per square foot).	pply. ge 30.)	Fire protection. (See also page 32.)	Electric current. (See also page 33.)	Remarks.
.....	.....	.....	City fire service...	110-volt lighting circuit.	Damaged by fire, only fill remains; undamaged part in fair condition; roadway on the wharf; total area of property, 106,137 square feet.
e shed. 10–20	Estimated 1,000	.....	.....do.....	.....do.....	Wharf in good condition; total area of property, 334,804 square feet.
.....	.....	.....	.....do.....	.....do.....	Wharf in fair condition; total area of property, 130,724 square feet.
.....	.....	.....	.....do.....	.....do.....	Wharf in good condition; total area of property, 131,490 square feet.
.....	.....	.....	.....do.....	.....do.....	Wharf in fair condition, but is not extensively used by water carriers; total area of property, 98,210 square feet.
.....	.....	.....	.....do.....	.....do.....	Portion of the wharf standing in fair condition; wood platform burned; only inshore end of wharf remains; total area of property, 112,765 square feet.
.....	.....	.....	.....do.....	.....do.....	Solid filled portion in fair condition; wood platform burned and only inshore end remains; total area of property, 105,729 square feet.
.....	.....	, 3-inch	.....do	110-volt lighting circuit.	Wharf in good condition and intensively used; total area of property, 632,178 square feet.
.....	.....	.....	.....do.....	.....do.....	Coal handled for gas company and stored.
.....	.....	, 2-inch	.....do.....	.....do.....	Used for pulpwood.
shed. ight of alls, 30.	Estimated, 1,000	.....	.....do.....	.....do.....	Good condition.

sheds.

Height between floors (feet).	Floor capa (pounds p square fo	upply. page 30.)	Fire protection. (See also page 32.)	Electric current. (See also page 33.)	Remarks.
		vice	City fire service	110-volt lighting circuit.	Wharf in good condition; used for ship repair work.
			do	do	Wharf in good condition; wharf used by S. O. barges carrying fuel and illuminating oils. (See Fuel-oil facilities.)
					Wharf in good condition; wharf used by steamers loading and unloading fuel oil. (See Fuel-oil facilities.)
		vice	City fire service	110-volt lighting circuit.	Wharf in good condition; is used in unloading gasoline from steamers and barges of Texas Oil Co.
		pipe line inch con- n to pipe n street; rvice.	City fire service	3-phase, 60-cycle, 220-volt, alternating current.	Wharf in bad condition; used by contractors for storage.
		vice	do	do	Wharf in fair condition; used by marine railway for ship repairing.
rage shed. 20			City fire service; hydrant and hose.	3-phase, 60-cycle, 110-volt lighting circuit.	In good condition; used principally for coal business.
			do	110-volt lighting circuit.	In good condition.
		vice	do	do	In good condition; used for sardine business only.

Type.	(a) Own	handling facilities.			Tariff.	Remarks.
		uipment.				
		Lifting capacity (tons).	Reach (feet).	Operation (steam, electric, hydraulic, hand).		
Barges...	Howard & Ho m	3	20	.....	Special rates.....	Towed.
	Electric Weld	.....	.....	.....	$11.75 per day for one machine.	Do.
Lighters.	A. R. Wright m	1	40	Steam engine.	None; boat out of commission.	Do.
	Randall & M	1	20	.....do.....	Rate made for coal, not for use of lighters.	Do.
	Bennett Cont d	15	.....	.....do.....	$40 per day.....	Do.
	Kennebec W m	1	75	.....do.....	.....	Do.
	P. H. Doyen	20-30	40	.....do.....	$125 per day..... / $85 per day.....	2 towed, 1 self-propelling.
Scows....	Portland Shi	.....	.....	.....	$100 per day, towage included. Special rates.	Towed.
Tugs.....	Central Wha	.....	.....	.....	.....	
	Steam Towbo	.....	.....	.....	Special rates.....	
	Jas. F. Perkin	.....	.....	.....	Special rates for towing; $2 to $5 per thousand gallons for water.	Tugs listed are all sea-going.
	E. R. Thomp	.....	.....	.....		
	H. T. Perkins	.....	.....	.....		

Cranes: None.
Derricks. (See lighte
Launches: Several h

There are no dry docks at this port. There is a 2,500-ton haul-out capacity marine railway capable of docking a 5,000-ton dead-weight steel ship and there are also two smaller marine railways.

Marine railways.

Type.	Owner.	Exact location in harbor.	Length (feet).		Width at entrance, cradle (feet).	Depth on keel blocks, mean high water (feet).		Lifting power (in tons).	Crane service.	Date built.	Remarks.	Charges.
			Over all.	On bottom or cradle.		For-ward	Aft.					
Marine railway, Crandall type.	Cumberland Shipbuilding Co.	South Portland, between Cushing Point and Fort Preble.	630	300	60	13	18	2,500	None.....	Completed Nov. 15, 1918.	1 electric-driven engine of 150 horsepower in head house, 38 by 24 feet.	Steam vessels, per gross ton: Lay days, $0.12; dock days, $0.14.[1] Schooners, per net ton: Lay days, $0.09; dock days, $0.12.[1]
Marine railway..	Portland Shipbuilding Co.	South Portland, foot of Dyer Street.	700	230	40	11	16	1,300	About 1 ton.	About 1870.....	Steam engine.....	Steam vessels, special rates. Schooners, per net ton: Lay days, $0.09; dock days, $0.12.[1]
Do.....	.....do.....	.....do.....	350	104	28	8	14	300	None.....	About 1902.....	.....do.....	Steam vessels, special rates. Schooners, per net ton: Lay days, $0.09; dock days, $0.12.[1]

[1] Includes hauling out and first 24 hours.

MARINE REPAIR PLANTS.

The Portland Co. has good facilities for making practically any kind of repairs on large-sized vessels. Included in the equipment are a 60-inch lathe that will turn 30 feet between centers, a 72 by 72-inch planer which will plane 31 feet long, a 12-foot boring mill, two 84-inch boring mills, and one 72-inch boring mill, besides numerous other planers, radial drills, and smaller tools. There is a boiler shop with a 25-ton overhead traveling crane, a foundry with a 20-ton overhead traveling crane, and a machine shop with a 15-ton overhead traveling crane. There are also large rolls, punches, and a 200-ton universal flanger in the boiler department. The company manufactures marine engines up to 1,500 horsepower, and engines of higher power could be made in an emergency. The shops are electrically lighted and the machines are driven by electricity. On the wharf there is an electric hoist and a pair of wooden shears 60 feet high and 25 tons capacity. The company normally employs about 550 men, of which those assigned to the shops are shown in the table below.

The Cumberland Co. has a plant which includes shipways, and all tools necessary for the building of wooden vessels, the same equipment being used for the repair of vessels hauled out on their 2,500-ton capacity marine railway, and to wooden vessels in general.

Howard & Horn are boiler makers, coppersmiths, and boat builders, and specialize in marine and stationary steam and gas engine repairing, electric welding, diving, and all kinds of submarine work. This company has a floating shop for use in making repairs to vessels. Rates for labor and equipment in effect February, 1921, are given below. Lower rates may be expected in the near future.

LABOR.		
Machinists	per hour..	$1.10
Boiler makers	do....	1.10
Blacksmiths	do....	1.10
Tinsmiths	do....	1.10
Ship carpenters	do....	1.10
Plumbers	do....	1.10
Steamfitters	do....	1.10
Electricians	do....	1.10
Coppersmiths	do....	1.25
Pattern makers, with tools	do....	1.20
Riggers	do....	1.15
Painters, first class	do....	1.15
Foreman	do....	1.50
Working foreman	do....	1.35
Helpers	do....	.85
Boiler, hull, and tank scalers	per hour..	.70

LABOR—continued.		
Foreman scaler	per hour..	$1.00
Substitute for sailors and firemen	per hour..	.70
Leadingman, sailors, and firemen	per hour..	1.00

EQUIPMENT.		
Yard tools, tackle, and rigging	per day..	2.00
Launches and work boats	per hour.	2.50
Truck	do....	2.50
Small truck	per trip..	.60
Derricks (½-ton to 5-ton hoist)		2.00
Material: Net, plus 15 per cent.		
Subcontracts: Net, plus 10 per cent.		
Boring bars with engine	per hour.	2.00

EQUIPMENT—continued.

Electric hammers	per hour	$0.25
Valve reseating machine	do	.35
Electric commutator turning machine	per hour	1.00
Small lathe	do	.40
Medium lathe	do	.70
Small planer	do	.70
Shaper	do	.50
Acetylene welding outfit	do	2.50
Acetylene burning outfit	do	2.00
Power hammer	do	1.30
Electric drills	do	.30
Air tools	do	.40
Air compressor, including 1 air line	per hour	3.00
Compressed air lines	do	1.00
Band saw	do	.60
Circular saw	do	.60
Wood planer	do	.60
Buckeye heater	do	.20
Wrecking pumps and suction hose (large)	per hour	2.00

EQUIPMENT—continued.

Wrecking pumps and suction hose (small)	per hour	$1.50
Steam-driven dynamo (capacity 150 lights)	per hour	1.50
Steam line, 1-inch, 100 pounds pressure	per hour	3.00
Double drum hoisting engine and rigging	per hour	2.00
Submarine diver, $3 per hour: minimum charge		24.00
Submarine diver scow	per hour	1.00
Electric welding	do	7.00
Boiler test pump	do	.25
Steam and water gauge testing machine	per hour	.25
Shop power (overtime)	do	1.00
Large grinder	do	.50
Propeller pulling equipment	per day	2.00

Working hours (eight-hour day):

8 a. m. to 12; 1 p. m. to 5 p. m.; straight time.

Double time for all overtime including night work, Sundays, and holidays.

Marine repair plants.

Name of plant.	Owner.	Exact location.	Repair shops.			Equipment for repairs to—				Largest shafts produced.	Largest casting produced (iron, steel, and brass).
			Designation.	Dimensions.	Number of employees.	Wood vessels.	Steel vessels.	Hulls, engines, boilers, and dynamos.	Equipment for calking wood steamers.		
				Feet.							
Portland Co....	Portland Co..	Just east of the overseas terminals of the Grand Trunk Ry.	Machine shop.....	150 by 62..	220	.....	.....	Complete plant for manufacturing and repairing boilers, engines, etc.	.....	Shafts up to 25 inches diameter and 30 feet in length.	Melting furnaces have capacity to make iron castings up to 20 tons.
			.....do.....	110 by 80..							
			.....do.....	150 by 62..							
			.....do.....	190 by 41..							
			.....do.....	70 by 41..							
			Copper and tin shops.	50 by 25..	.....	.....	.....	.....	.....	.....	Brass castings up to 2,000 pounds.
			Foundry.....	203 by 87..	.....						
			Boiler shop.....	203 by 87..	3						
			.....do.....	75 by 55..	88						
			Forge shop.....	182 by 60..	11						
			Wood-working shops.	80 by 62..	19						
Cumberland Shipbuilding Co.	Cumberland Shipbuilding Co.	South Portland, between Madison and Fort Hill Streets and between B. & M. and Vaughan's Bridges.	Planing mill.....	40 by 50..	25	Complete equipment for building and repairing wooden vessels.	.....	.....	Complete equipment.	None.....	None.
			Sawmill.....	20 by 80..							
			.....do.....	25 by 60..							
			Engine room.....	20 by 40..							
			Machine shop.....	40 by 40..							
			Blacksmith shop..	20 by 40..							
			Numerous storehouses.	.....	*						
Portland Ship Ceiling Co.	Portland Ship Ceiling Co.	Facilities on end of Brown's Wharf.	Machine Shop.....	60 by 70..	15	Most any kind of work above water; no railways for hauling out.	Tools for bending and working steel plates.	Electric welding 80-inch boring box, compressed-air machines and tools.	Launches, work rafts; calking above water.	None.....	None.
			Boiler Shop.....	20 by 20..							
			Do.....	18 by 22..							
			Blacksmith shop..	12 by 20..							
Noyes' Machine Co.	Noyes' Machine Co.	South Portland, Portland Shipbuilding Co. wharf.	Machine shop.....	40 by 80..	5	Machine repairs only.	Machine repairs only.	Lathes, planers, boring machines, etc.	None.....	.....do.....	Do.
			Pipe shop.....	20 by 40..							

Portland Shipbuilding Co.	Portland Shipbuilding Co.	South Portland, west of ferry landing.	Woodworking mill Blacksmith shop.. Storehouse..... Paint shop.....	40 by 50.. 20 by 25.. 40 by 60.. 20 by 40..	20	1 300-ton, 1 1,300 ton	Marine railway.	Floats and work rafts.	Yes.....	.....do.....	Do.
Howard & Horn	Howard & Horn.	Portland Pier.....	Machine shop (2 stories). Blacksmith shop.. Floating machine shop.	40 by 80.. 20 by 40.. 40 by 80..	30	Have carpenters for repairs to wood vessels.	Tools for working steel plates.	Electric welding equipment; fully equipped machine shop.	None.....	.....do.....	Do.
Williams Bros. Co.	Williams Bros. Co.	Customhouse wharf.	Machine shop..... Storeroom.....	40 by 50.. 40 by 75..	10	No hull repairs.	Electric welding equipment, portable machines and drills.	Electric welding equipment, portable machines and drills, engine and boiler repairing.	.....do.....	.....do.....	Do.
Smith & Landmaid.	Smith & Landmaid.	Central Wharf.....	Machine shop.....	40 by 50..	5	.....do.....	No hull repairs.	Gasoline engines repaired.	.....do.....	.....do.....	Do.

COAL BUNKERING.

While Portland possesses a number of wharves equipped for handling coal, facilities for bunkering directly from piers are available at only three wharves. The Pocahontas Fuel Co. (Inc.) occupies Long Wharf and has the most modern equipment which the port affords for this purpose. On the westerly side of the outer section of the wharf is a trestle having a track on which are two movable frame towers, each of which contains a steam hoisting engine. There is a horizontal arm above the engine house, which carries a 1½-ton clamshell bucket. A turntable is provided for swinging the tower so that coal may be carried from vessel to storage pile, or from the storage pile to vessel. For bunkering, special chutes are used. The towers have a capacity of 200 tons per hour each for loading cars or for bunkering. Immediately shoreward from the trestle is an overhead covered storage with chutes for supplying cars and vehicles. The combined storage capacity is about 30,000 tons and large quantities of coal are kept on hand at all times. Vessels bunkering directly from the pier use the westerly slip, the greater part of which has only 14 feet of water, while the maximum is 22 feet at mean low water.

Pocahontas coal for bunker purposes is supplied to all large vessels from the plant of the Pocahontas Fuel Co. by Randall & McAllister, which company operates four lighters equipped for bunkering. This method has the advantage of enabling the vessel to take on her fuel while discharging or loading cargo, and avoids an extra movement within the port. The lighters of the Randall & McAllister Co. are equipped with mast and boom carrying a bucket, and have a combined capacity of 2,000 tons. Three or four lighters can be worked alongside a large freighter at one time. The Randall & McAllister Co. can also bunker coastwise vessels directly from its pier. The pier equipment consists of a coal trestle about 200 feet long. The lower level is open, while the second affords storage, and there are numerous chutes for delivering to cars and vehicles beneath. Above the storage floor is a track carrying a car for supplying the storage. Coal is unloaded from vessels by a frame tower, in the base of which is mounted a steam hoisting engine. Chutes are available for bunkering, but the plant is not well adapted for ocean vessels, and its use for bunkering purposes is limited chiefly to coastwise steamers. Its capacity for unloading coal is about 200 tons per hour, and its bunkering capacity is about 100 tons per hour. About 15,000 tons of bituminous coal, and 10,000 tons of anthracite coal are kept on hand at all times. This company does about 9 per cent of the bunkering business of the port, chiefly by means of lighters.

Coal-bunkering facilities.

Name of owner.	Location on water front.	Storage capacity (tons).			Hoists.		Bunker coal.		Cost of coal per long ton.			Method of bunkering.	Remarks.
		Covered.	Open.	Pocket.	Equipment.	Delivery capacity of each per hour.	Source.	Quality.	Alongside vessel.	Placing on board.	Trimming in bunkers.		
A. R. Wright Co.	Portland Terminal Co. wharf.	3,000	.....	9,600	2 movable wooden towers, 2 steam hoisting engines, 2 1-ton clamshell buckets.	Aggregate capacity, 150 tons normal, 200 tons maximum.	Pennsylvania, West Virginia, Maryland.	Best..	.....	[3] $10.35	$0.85	Tugs and small steamers bunkered from wharf, by hand carts.	Bunkering capacity, 35 tons per hour. See Floating equipment.
Pocahontas Fuel Co.	Long Wharf...	.....	20,000	6,000	2 movable wooden towers, 2 steam hoisting engines, 2 1½-ton clamshell buckets.	Aggregate capacity, 400 tons per hour.	Virginia, West Virginia.	.. do..	.....	[3] 11.50	.85	From wharf.....	Bunkering capacity, 400 tons per hour.
Randall & McAllister.	Randall & McAllister wharf.	(1)	(1)	15,000	2 movable wooden towers, 2 steam hoisting engines, 2 1-ton clamshell buckets.	100 tons.....	West Virginia, Virginia, Pennsylvania.	.. do..	[3] $11.25	12.75	.85	Tugs and small steamers bunkered from wharf, by hand carts.	Bunkering capacity, 100 tons per hour. See Floating equipment for description of 4 lighters, combined bunkering capacity 2,000 tons per day.
Kennebec Wharf & Coal Co.	.....	(2)	(2)	(2)	.....	.....	.....	.....	.....	[3] 12.00	.....	From lighter to ship.	Bunkering capacity, 100 tons per hour. See Floating equipment.

[1] Also operates 4 bunkering lighters.
[2] Operates 2 lighters. No storage; taken from cars as received into lighters.
[3] Feb. 21, 1921, rates. Rates have since been reduced to an average of $8.50 per ton trimmed into bunkers at wharf and $9.60 delivered by lighter to vessel in any part of harbor, including trimming into bunkers.

The only other pier at Portland affording coal bunkering facilities is the Portland Terminal Co.'s wharf, 346 to 380 Commercial Street, on which is located the plant of the A. R. Wright Co. This plant has two frame towers, each of which has a 1-ton bucket, operated by a steam hoisting engine. The towers can handle about 150 tons per hour. Only small boats, such as tugs, are bunkered at this wharf. The storage capacity is 8,000 tons.

The Kennebec Wharf & Coal Co. has two lighters for bunkering.

From the above it will be seen that nearly all bunkering at Portland is from lighters, and that large vessels are invariably bunkered in this manner. Vessels bringing coal from Newport News to Portland are supplied with sufficient fuel for the round trip. Trans-Atlantic liners sometimes coal at Cape Breton and Halifax, but Nova Scotia coal is not equal to the Pocahontas coal supplied at Portland, and the usual practice is to coal these vessels for the return trip at Portland.

OIL BUNKERING.

The only plant available for oil bunkering of large vessels is that of the Mexican Petroleum Co. This plant is on the South Portland side of Fore River below Vaughan's Bridge. A channel 28 feet deep is kept open, and the largest ships bunker here, by taking advantage of the tide. This company can make connections for bunkering any oil-burning vessel. The Standard Oil Co. at present has facilities for supplying small boats only, and it has a large business in furnishing oil and gasoline to the many small craft plying the waters of Casco Bay and vicinity. It has applied for a permit to construct a new wharf adjacent to its present one, and expects to provide modern facilities for bunkering vessels.

In addition to the above, there are several stations furnishing oil and gasoline to launches and other small craft.

GRAIN ELEVATORS.

The only grain elevators at this port are two belonging to the Grand Trunk Railway and located in rear of the Grand Trunk wharves at the easterly end of Commercial Street. These elevators are of wood, with sheet-iron siding and have a combined rated capacity of 2,300,000 bushels, and a maximum capacity of 3,000,000 bushels. A total of 43,000,000 bushels has been moved through these elevators in one year, necessitating the use of a large part of the car storage capacity. Grain is transferred from granary to car at the rate of 9,000 bushels per hour over each of the five belts, and from granary to ship at the rate of 6,000 to 10,000 bushels per hour over each belt. The grain is carried from the elevators through galleries on each side of the three wharves by belt conveyors operated by steam and electricity. There are 42 chutes, spaced 62 to 70 feet apart, with a similar number of loading spouts, seven being on each side of Atlantic, Ocean, and New wharves.

Fuel-oil facilities.

unkering facilities—Barges.				ly.			
y).	Discharge capacity (barrels per hour).	Conn Size (inches).	Numb	Grades.	Quantity kept in stock. Maximum (barrels).	Average (barrels).	Remarks.
				educed Mexican fuel oil, known as "Mexpet fuel oil," B. T. U. 18,000 and over per pound.	192,428	125,000	42 gallons per barrel; 8-inch hose reduces to 6 inch.
,620	30	2½	Standa	lotor gasoline			42 gallons per barrel.

Storage warehouses.

dities stored.	Cold storage fa (tons of refriger
dise	None
	do
d provisions	15,000
y	8,000 barrels pounds each.
d provisions	2,000
y	1,500
nd produce	2,500

Bulk-freight storage, covered and uncovered, except storage warehouses.

Designation.	(a) Owner. (b) Operator.	Exact location.	Commodities stored.	Covered or uncovered.	Area (square feet).	Transfer between ship and pier, quay, or wharf and storage.			Remarks.
						Method.	Mechanical handling facilities.		
							Type of equipment.	Operation.	
East Deering Yards.	(a) Grand Trunk System. (b) Same.	East Deering end of Grand Trunk Bridge.	Coal...	Open and and covered.	30,000	Direct into storage bin.	4 towers, 4 hoisting engines, 4 1½-ton buckets.	Steam...	Storage capacity, 30,000 tons; coal pockets dismantled.
Portland Terminal Co.	(a) Portland Terminal Co.	Deering Junction...	...do...	Open....	10,000	Railroad.....	.....	...do.....	Storage capacity, 3,300 tons.
	(b) Same.	Thompson's Point.	...do...	...do.....	25,000	.....do.....	Elevated railroad trestle.	...do.....	Storage capacity, 15,000 tons.
		Foot of Danforth Street.	...do...	...do.....	12,000	Counterweighted cars on elevated rails.	2 hoisting engines and 2 cars, gravity operated.	...do.....	Storage capacity, 7,200 tons.
		No. 2 wharf and trestle.	...do...	...do.....	15,000	Cable railway to storage pile.	2 movable wooden towers, 2 hoisting engines, 2 1-ton buckets.	...do.....	Storage capacity, 8,500 tons.
A. R. Wright Co....	(a) A. R. Wright Co... (b) Same.	Portland Terminal Wharf.	...do...	Covered.	17,000	Direct into storage.	.....do.....	...do.....	Storage capacity, 9,600 tons.
Pocahontas Fuel Co.	(a) Pocahontas Fuel Co. (b) Same.	Long Wharf.....	...do...	Open....	60,000	.....do.....	2 movable wooden towers, 2 hoisting engines, 2 1½-ton buckets.	...do.....	Storage capacity, 26,000 tons.
				Covered.	8,820	.....do.....	.....do.....	...do.....	Shed, 126 feet long and 70 feet wide.
Randall & McAllister.	(a) Randall & McAllister. (b) Same.	Randall & McAllister Wharf.	...do...	...do.....	50,000	Distributed into bins by cable railroad.	2 movable frame towers, 2 hoisting engines, 2 1-ton clamshell buckets.	...do.....	Storage capacity, 15,000 tons.
Lehigh Coal & Navigation Co.	(a) Lehigh Coal & Navigation Co. (b) Same.	Union Wharf.....	...do...	Open....	5,000	Direct into storage bins.	1 movable frame tower, 1 hoisting engine, 1 1-ton bucket.	...do.....	Storage capacity, 2,000 tons.
Wm. Spear Co.....	(a) Wm. Spear Co..... (b) Same.	215 Front Street, South Portland.	...do...	Covered.	4,000	Counterweighted cars on elevated rails.	Stiff-leg derrick, 1 1-ton bucket, 1 automatic dump car.	Electric.	Storage capacity, 1,500 tons.

WATER SUPPLY.

Sebago Lake is the source of the water supply of Portland, which is ample for all demands either for drinking or use in boilers. The water is soft and contains little organic matter. The following show the results of recent analyses:

Mineral analysis—Results in parts per million.—

Total solids	22.00	Sulphates	5.68
Loss on ignition	10.00	Magnesium oxide	2.22
Silica	2.00	Chlorine	1.50
Aluminum oxide	.23	Nitrates	.66
Iron oxide	.07	Carbonates	2.42
Calcium oxide	3.95	Sodium	1.21

Sanitary analysis—Results in parts per million.—

Taste	None.	Required oxygen	3.45
Odor	None.	Hardness	14.7
Color (platinum scale)	11	Alkalinity	5.0
Sediment (quickly falling)	None.	Carbon dioxide	1.0
Turbidity	None.	Iron	.03
Chlorine	3.0	Total solids	22.00
Nitrogen in nitrates	.1	Loss on ignition	13.00
Nitrogen in nitrites	Trace.		

These results show a water low in mineral matter and suitable for boilers and manufacturing purposes. Water is obtainable at the following wharves:

Grand Trunk wharves, Portland water district.—Water is supplied from pipe lines on wharves to vessels at berths, at a cost of 20 cents per 1,000 gallons, but when taken from the wharf there is an additional charge of $4 to $5 per day for attendant, and $1 for carting hose to and from pier or wharf.

Randall & McAllister wharf. **Long Wharf, Pocahontas Fuel Co.** **Portland Terminal Co. wharf, A. R. Wright.** **Brown's Wharf, Portland Ship Ceiling Co..**	Rate 60 cents to $1 per 1,000 gallons.

Water is supplied to vessels lying in the stream by three small tugs, which specialize in this service. These are as follows:

Tug *Ben Hur;* location, Portland Pier.

Tug *Sebago;* location, Long Wharf.

Tug *Startle;* location, Long Wharf.

FIRE PROTECTION.

The city of Portland has an efficient fire department which is available for protection of the water front. The water pressure on the water front varies from 45 to 75 pounds, which gives good service streams along the entire frontage, even without the use of engines. In addition there is one harbor fire boat.

The Grand Trunk terminals are provided with an elaborate system of fire protection. In addition to a plug for the fire boat, there are 36 monitors distributed along the transit sheds. These monitors are provided with swiveled nozzles which enable them to be turned in any direction. Power is furnished from an engine on shore. There are also numerous fire-alarm boxes on the transit sheds. Cables are provided for use in destroying the grain galleries in event of fire, the plan being to pull out the supports by the use of locomotives, and thus prevent the spread of the fire from the piers to the grain elevators, or vice versa.

The A. R. Wright Co., which is located on the Portland Terminal wharf, has a 6-inch main, 65 pounds pressure, city service.

The Pocahontas Fuel Co., on Long Wharf, has four hydrants, 3-inch main, 65 pounds pressure, city service.

Randall & McAllister on the Randall & McAllister wharf has city service, 65 pounds pressure.

All wharves are supplied with water, but only the above have fire hydrants.

WRECKING AND SALVAGE FACILITIES.

There are no facilities equipped especially for wrecking and salvage. In case of emergency, certain of the facilities listed under Floating equipment, are available for these purposes.

ELECTRIC CURRENT.

Electric current for power and lighting is produced by the Cumberland County Power & Light Co., which has water-power plants on the Saco and Presumpscot Rivers, and substation and steam auxiliary plants near South Portland end of Portland Bridge, Forrest Avenue, Sewell Street and foot of Plum Street. The current from the power plant is alternating, 3-phase, 60-cycle, with a primary voltage of 2,300. The normal supply is 19,000 kilowatts per hour. Secondary currents are arranged and installed to provide customers with voltage desired, as follows: 3,650 kilowatts direct current, 550 volts; 960 kilowatts direct current, 125 volts; 450 kilovolt amperes alternating current, 2,300 volts. Only alternating current is available at the wharves.

PROVISIONS.

The city is well equipped with the proper classes of commission houses and merchants to accommodate any development that might call for increased stores for the supply and provisioning of ships.

BALLAST.

Ballast of entering vessels is removed by lighters and wasted. There is no call for ballast by outbound vessels, and there are no stablished charges.

PILOTAGE.

Pilotage is optional. The channel is so direct that vessels in foreign trade using this port regularly dock and sail without a port pilot. Between October 1 and May 1, a pilot boat will usually be found cruising outside Portland Head, and vessels desiring a pilot will be boarded when making signal. In the summer, pilots are on the lookout for vessels requiring their services. Vessels making signal for a pilot should stand off and on outside Portland Head until boarded.

Pilotage rates are $3 per foot of draft inward and $2 outward. For shifting from one berth to another within the harbor, and from anchorage to berth, there is a flat charge of $5.

DOCKAGE.

At the railroad owned or controlled piers which constitute practically all of the facilities available for public use, no dockage charges are assessed against vessels loading or discharging cargo on which the railroad company receives the line haul.

TOWAGE.

There are three ocean-going towboats, and several smaller craft are available for towing. The charges are as follows:

	Net tonnage.	Charge.
Below the bridges:		
Sea to berth or vice versa	Up to 3,000	$30
Do	3,000–3,500	50
Do	3,500–6,000	80
Do	Above 6,000	Special rates.
Assisting to berth (1 tug)		25
Assisting to berth (2 tugs)		40
Assisting to unberth (1 tug)		25
Assisting to unberth (2 tugs)		40
Above one bridge:		
Sea to berth or vice versa	Up to 3,000	40
Do	3,000–3,500	60
Do	3,500–5,000	Special rates.
Assisting to berth	200– 300 up to 3,500–6,000	9 up to 60
Above two bridges:		
Sea to berth or vice versa	Up to 3,000	50
Do	3,000–3,500	75
Do	3,500–5,000	Special rates.
Above three bridges:		
Assisting to berth	200 up to2,500–6,000	18 up to 88

Shifting without assistance of ship's engines, $45; special rates for other movements within the harbor.

WHARFAGE.

See Railroads.

LIGHTERAGE.

There is no free lighterage or floatage performed at this port.

STORAGE.

See Railroads and Storage warehouses.

LOADING AND DISCHARGING VESSELS.

Freight-handling machinery.—There are no modern facilities at this port for handling package freight. Such freight is loaded and unloaded by ship's tackle and hand trucks. The Grand Trunk wharves have small derricks for moving heavy articles.

The facilities for handling bulk freight include a number of frame towers with clamshell buckets operated by steam hoisting engines. The type generally in use is locally known as the Boston tower, being a timber tower of A-frame design, having a horizontal arm with trolley. The arm is generally hinged to enable it to be moved to permit passage of vessel masts. The steam hoisting engines are installed in an engine room in the base of the tower, and the whole structure moves on a track along the top of a high trestle. Coal or other bulk material is picked up from vessels and deposited in a hopper in the tower. This hopper in some cases feeds a small tramcar used for distributing coal to any part of the storage pockets beneath, and in other cases it feeds chutes leading to an open storage pile. The towers of this type are constructed in each case to meet the particular requirements of the wharf at which installed and differ somewhat in shape and capacity. The Pocahontas Fuel Co. has a turntable in the track which enables the tower to be used for loading or bunkering vessels from the storage pile by attachment of chutes for this purpose.

The most modern facilities at the port for handling bulk freight are found at the Portland Terminal Co.'s Wharf No. 1. These consist of four movable steel gantry cranes and are described in the general statement regarding the wharves of this company.

Grain is loaded into vessels from the elevators of the Grand Trunk Railway by spouts fed from galleries carrying belt conveyors. These facilities are described under "Grain elevators."

Loading and discharging are performed by shore labor and the average quantity of miscellaneous cargo handled inward or outward is 400 tons in eight hours. Four hatches are capable of being worked at one time. Gangs consist of about 16 men, one gang per hatch handling from 12 to 14 tons per hour. The cost of loading and discharging cargo ranges between $1 and $1.50 per ton.

Stevedoring contractors of the port include the Portland Ship Ceiling Co., Robert M. Smith, and M. F. Donovan.

Transit cargo.—The Grand Trunk terminals are fully equipped for the handling of all transit cargo both inbound and outbound, and cargo of this nature receives prompt dispatch. The loading of cargo

from shed floor to steamer is performed by the ocean carriers, or their agents and the average cost is as follows:

Flour	per gross ton	$1.30
Cheese	do	1.35
Provisions	do	1.30
Canned goods	do	1.45
Lumber and deals	per standard ton	6.00
Timber	per load	3.20

These figures include overtime, waiting time, and overhead expenses.

Checking and Tallying.—Coastwise and local shipping companies check into shed, out of teams or out of vessel. At the Grand Trunk wharves the export and import traffic is checked by the Grand Trunk Railway, the steamship company and the United States customs officials. Shipments for export are checked from cars to sheds by Grand Trunk and customs checkers and from shed to steamers by Grand Trunk and steamship checkers, as well as United States customs checkers.

Receipts on inward cargo are given ship by customs representatives, consignees or other agents, and on outward cargo receipts are delivered to steamship companies or their agents.

Labor.—Union stevedores observe a basic eight-hour day. Tally clerks and delivery clerks work on a basis of eight hours a day. Nonunion men receive wages in accordance with the union scale. This scale provides for time and one-half for night work, and on Sundays and holidays.

The following holidays are observed: New Years (January 1); Washington's birthday (February 22); Memorial Day (May 30); Independence Day (July 4); Labor Day (first Monday in September); Thanksgiving Day (fixed by presidential proclamation and generally the last Thursday in November); and Christmas Day (December 25). The labor supplied in the past has always been sufficient.

Ship's labor.—The ocean carriers look after the handling of all export and import freight to and from steamers either by their own stevedores, or by contract with public stevedores, wages being paid either by steamship company's agent or stevedore performing the service.

Check or tally clerks.—Coastwise and local companies employ their office forces as checkers. At the Grand Trunk wharves, checkers are employed in the winter season when the greatest amount of shipping is done. They are not employed throughout the year. The men are generally of high class.

Labor is not entirely union controlled but the percentage of nonunion labor is not known. There is little or no competition by outside industries for shipping labor at the time of greatest demand.

Scale of wages paid various classes of labor engaged in the loading and discharging of vessels.

Class.	Rate per hour.	Rate for overtime per hour.	Night work per hour.	Sundays and holidays per hour.
Stevedores, general cargo	$0.80	$1.20	$1.20	$1.20
Stevedores, bulk cargo	.85	1.25	1.25	1.25
Stevedores, grain cargo	1.00	1.50	1.50	1.50
Stevedores, wet hides	.95	1.35	1.35	1.35
Stevedores, refrigerated cargoes, 20° or lower	.90	1.30	1.30	1.30
Tally clerks and delivery clerks	.67½	1.0125	1.0125	1.0125

Stevedoring companies or contractors undertake loading or discharging at the following commodity rates:

Grain, $3 per thousand bushels.
Bagging grain, $0.01½ per bushel.
Stowing bags of grain, $0.50 per ton.
General cargo, $0.80 per ton (average).

MISCELLANEOUS CHARGES.

Running lines.—The charge for running lines is $5.

Shipping documents.—Entrance and clearance fees, $2; measurements, North American trade, 2 cents per ton; overseas trade, 6 cents per ton.

Brokerage fees for chartering vessels range from $50 to $100, including attention to ship's business in port.

Agency fees average $100 for lines not usually handled by their own agents.

Consular fees.—The charge of British consul for entering and clearing is $1.90; Norwegian, $1.10, and French, $2.

Interpreters' fees.—An average fee for interpreters is $10 a day, but they are seldom employed.

Sling hire is included in contracts for stevedoring.

Dunnage charges amount to $42 to $45 per thousand feet board measure. The charge varies with the character of the cargo and the size and construction of the ship.

Watching.—The charge for each watchman is $4 per day or night,

Launch hire.—There are no fixed rates.

Harbor dues.—There are no harbor dues at this port.

Port warden's fees.—For examination of hatches and cargoes of sailing vessels, $5, and $2 additional if certificate of damage is required. The charge for steamers, including certificate of damage, varies from $5 to $10.

Tonnage dues.—Two cents per net ton, maximum; 10 cents per year on all vessels in foreign trade from North America, Central America, West Indies and countries in South America bordering the Caribbean Sea. From all other countries the charge is 6 cents per net ton, maximum 30 cents per year.

Weighing.—There are no fixed rates.

There are no hospital or light dues and no charges for quarantine inspection and bill of health.

COMMUNICATIONS.

RAILROADS.

Portland is served by three railroads; the Grand Trunk, the Maine Central, and the Boston & Maine. It also has a belt line system owned by the Portland Terminal Co.

The Grand Trunk Railway line from Montreal is used primarily to bring export traffic into Portland. It enters at the northern end of the city, across the mouth of Back Cove, and follows the waterfront to its terminals at the easterly end of Commercial Street. The main freight yards and car and engine facilities are located at East Deering, north of Back Cove. Coal pockets are maintained at the East Deering end of the bridge. The Grand Trunk connects with the Portland Terminal Co. at Portland Junction, which is at the Portland end of the bridge.

The Maine Central Railroad, whose headquarters are at Portland, operates two divisions: The Mountain Division through the White Mountains to St. Johnsbury, Vt., with a line north into the Province of Quebec; and the Portland Division to Lewiston, Augusta, Bangor, and other cities north and east of Portland.

The Boston & Maine Railroad has a line from Portland to Boston via Portsmouth, and another from Portland to Boston, via Dover, and it also operates the Worcester, Nashua and Portland Division.

There are also two electric freight and passenger lines entering Portland, viz: The **Androscoggin Electric Co.,** and the **Cumberland County Power & Light Co.**

Belt line facilities extend entirely around the city, making use of the Portland Terminal Co.'s tracks west of Union Wharf on Commercial Street; thence via the Portland Terminal Co.'s freight yards, the Union Station, and the line around the northerly side of the city to Portland Junction. From this point the Grand Trunk tracks may be used along the water front through the terminal yard near the Grand Trunk Station and the wharves along Commercial Street to Union Wharf. Thus it is possible to transfer cars between all of the railroads entering Portland and any wharf on the water front. The Portland Terminal Co. owns all the terminal property formerly controlled by the Boston & Maine and the Maine Central Railroads in Portland and vicinity, including tracks, wharves, and other facilities in Portland, South Portland, and Westbrook.

Railroad rates.—On export traffic originating at points north of the Ohio River and west of a line drawn through Buffalo, New York, Pittsburgh, Pa., and Huntington, W. Va., Portland has the

same rates as Boston and New York, and similar rates also apply to St. John, New Brunswick, while the rate to Halifax is 1 cent per 100 pounds higher. It should be noted, however, that these export rates do not apply to Portland over a number of important railroads, including the trunk lines which have their terminals at New York, Philadelphia, and Baltimore. On these roads the domestic rates apply to Portland, thus establishing a differential against Portland on export business from the West as compared with New York and Boston, except from territory served by the Grand Trunk Railway and its connections. The rates to Philadelphia are 2 cents lower and to Baltimore 3 cents lower on most commodities than to Portland, Boston, and New York. On export grain the difference in favor of Philadelphia is 1 cent and Baltimore 1½ cents. On import traffic the Grand Trunk Railway quotes low rates in order to meet the competition of Canadian ports and lines and this competition gives Portland rates on import traffic which are on substantially the same basis as those of Baltimore.

On domestic business from the West, Boston and Portland take the same rates, which are higher than those to New York. Montreal takes the New York rates on domestic business from the West, but it takes the Philadelphia rates on through export traffic. The following table shows the rate disadvantages of Portland as an outlet for traffic from the West, via American lines.

First-class rates to Atlantic ports from points named below and points taking same rates via lake and rail, or rail, lake, and rail.

[Rates in cents per 100 pounds.]

To—	From—		
	Cleveland, Ohio.	Chicago, Ill.	St. Louis, Mo.
Halifax, Nova Scotia	197½	202½	229½
Export	124	147½	174
St. John, New Brunswick	194½	199	226
Export	123	146½	173
Quebec, Quebec	166½	171	198
Export	123	146½	173
Montreal, Quebec	142	146½	173½
Export	121	144½	171
Portland, Me	115	153½	180
Export	115	[1] 146½	[1] 173
Boston, Mass	115	153½	180
Export	115	146½	173
New York, N. Y	105	146½	173
Export	105	146½	173
Philadelphia, Pa	102	144½	171
Export	102	144½	171
Baltimore, Md	101	143½	170
Export	101	143½	170

[1] Not applicable via Baltimore & Ohio, Buffalo, Rochester & Pittsburgh, Central of New Jersey, Delaware & Hudson, Delaware, Lackawanna, & Western, Erie, Lehigh Valley, New York Central, New York, Ontario & Western, Pennsylvania R. R., Philadelphia & Reading, Western Maryland, and West Shore Railroads.

First-class all-rail rates to Atlantic ports from points named below and points taking the same rates.

[Rates in cents per 100 pounds.]

To—	From—					
	Pittsburgh, Pa.	Cleveland, Ohio.	Cincinnati, Ohio.	Chicago, Ill.	Louisville, Ky.	St. Louis, Mo.
Halifax, Nova Scotia	200	197½	213	213	225½	239½
Export	124	124	138	158½	158½	185
St. John, New Brunswick	197½	194½	210	210	222½	236½
Export	123	123	137	157½	157½	184
Quebec, Quebec	169½	166½	182	182	194½	208½
Export	123	123	137	157½	157½	184
Montreal, Quebec	145	142	157½	157½	173½	184
Export	121	121	135	155½	155½	182
Portland, Me	101½	119	144	164½	164½	191
Export[1]	94½	112	137	157½	157½	184
Boston, Mass	101½	119	144	164½	164½	191
Export	94½	112	137	157½	157½	184
New York, N. Y	94½	112	137	157½	157½	184
Export	94½	112	137	157½	157½	184
Philadelphia, Pa	86	110	135	155½	155½	182
Export	86	110	135	155½	155½	182
Baltimore, Md	83½	109	134	154½	154½	181
Export	83½	109	134	154½	154½	181

[1] Export rates to Portland, Me., do not apply via Baltimore & Ohio, Buffalo, Rochester & Pittsburgh, Central of New Jersey, Delaware and Hudson, Delaware, Lackawanna & Western, Erie (lines east), Lehigh Valley, Maine Central, New York Central (east), New York, Ontario & Western, Pennsylvania R. R., Philadelphia & Reading, Western Maryland, and West Shore. Export rates to Portland via these lines are the same as those applying on domestic traffic.

Export class rates to Atlantic ports from Chicago, Ill., and points taking same rates, via all-rail.

[Rates in cents per 100 pounds.]

	Classes.					
	1	2	3	4	5	6
Halifax, Nova Scotia	158½	139½	106	74½	64	53½
St. John, New Brunswick	157½	138½	105	73½	63	52½
Quebec, Quebec	157½	138½	105	73½	63	52½
Montreal, Quebec	155½	136½	103	71½	61	50½
Portland, Me.[1]	157½	138½	105	73½	63	52½
Boston, Mass	157½	138½	105	73½	63	52½
New York, N. Y	157½	138½	105	73½	63	52½
Philadelphia, Pa	155½	136½	103	71½	61	50½
Baltimore, Md	154½	135½	102	70½	60	49½

[1] Export rates to Portland, Me., do not apply via Baltimore & Ohio Railroad, Buffalo, Rochester & Pittsburgh Railroad, Central Railroad of New Jersey, Delaware & Hudson Railroad, Delaware, Lackawanna & Western Railroad, Erie Railroad (line east), Lehigh Valley Railroad, Maine Central Railroad, New York Central Railroad (East), New York, Ontario & Western Railroad, Pennsylvania Railroad, Philadelphia & Reading Railway, Western Maryland Railroad, nor West Shore Railroad. Export rates to Portland via these lines are the same as those applying on domestic traffic.

Domestic class rates to Atlantic ports from Chicago, Ill., and points taking same rates, via all-rail.

[Rates in cents per 100 pounds.]

	Classes.					
	1	2	3	4	5	6
Halifax, Nova Scotia	213	187	147	108½	91	77
St. John, New Brunswick	210	184	145½	107	89½	75½
Quebec, Quebec	182	159½	122½	87½	73½	61½
Montreal, Quebec	157½	138½	105	73½	63	52½
Portland, Me	164½	144½	110	77½	66	54½
Boston, Mass	164½	144½	110	77½	66	54½
New York, N. Y	157½	138½	105	73½	63	52½
Philadelphia, Pa	155½	136½	103	71½	61	50½
Baltimore, Md	154½	135½	102	70½	60	49½

Rates on cotton piece goods via all-rail to Atlantic ports from points named below and points taking the same rates.

[Rates in cents per 100 pounds.]

To—	From—					
	Pittsburgh, Pa.	Cleveland, Ohio.	Cincinnati, Ohio.	Chicago, Ill.	Louisville, Ky.	St. Louis, Mo.
Halifax, Nova Scotia	149	147	159	159	168½	179
Export	92½	92½	103½	118½	118½	139
St. John, New Brunswick	147	144½	156½	156½	166	177
Export	92	92	102½	117½	117½	138
Quebec, Quebec	126	123½	135½	135½	145½	156
Export	92	92	102½	117½	117½	138
Montreal, Quebec	108½	106	117½	117½	127½	138
Export	90	90	100½	115½	115½	136
Portland, Me	75½	89	108	122½	122½	143
Export[1]	70½	84	103	117½	117½	138
Boston, Mass	75½	89	108	122½	122½	143
Export	70½	84	103	117½	117½	138
New York, N. Y	70½	84	103	117½	117½	138
Export	70½	84	103	117½	117½	138
Philadelphia, Pa	63½	82	101	115½	115½	136
Export	63½	82	101	115½	115½	136
Baltimore, Md	61½	81	100	114½	114½	135
Export	61½	81	100	114½	114½	135

[1] Export rates to Portland, Me., do not apply via Baltimore & Ohio, Buffalo, Rochester & Pittsburgh, Central of New Jersey, Delaware & Hudson, Delaware, Lackawanna & Western, Erie (lines east), Lehigh Valley, Maine Central, New York Central (east), New York, Ontario & Western, Pennsylvania R. R., Philadelphia & Reading, Western Maryland, and West Shore. Export rates to Portland via these lines are the same as those applying on domestic traffic.

Rates on paper, news print, via all-rail to Atlantic ports from points named below and points taking the same rates.

[Rates in cents per 100 pounds.]

To—	From—					
	Pittsburgh, Pa.	Cleveland, Ohio.	Cincinnati, Ohio.	Chicago, Ill.	Louisville, Ky.	St. Louis, Mo.
Halifax, Nova Scotia	73	72	77	77	81	86
Export	42½	42½	46½	53½	53½	62½
St. John, New Brunswick	71½	70½	75½	75½	80	84½
Export	41½	41½	45½	52½	52½	61½
Quebec, Quebec	57½	56½	61½	61½	66	70½
Export	41½	41½	45½	52½	52½	61½
Montreal, Quebec	48½	47½	52½	52½	58	61½
Export	39½	39½	43½	50½	50½	59½
Portland, Me	33½	39	47½	54½	54½	63½
Export[1]	31½	37	45½	52½	52½	61½
Boston, Mass	33½	39	47½	54½	54½	63½
Export	31½	37	45½	52½	52½	61½
New York, N. Y	31½	37	45½	52½	52½	61½
Export	31½	37	45½	52½	52½	61½
Philadelphia, Pa	28½	35	43½	50½	50½	59½
Export	28½	35	43½	50½	50½	59½
Baltimore, Md	27½	34	42½	49½	49½	58½
Export	27½	34	42½	49½	49½	58½

[1] Export rates to Portland, Me., do not apply via Baltimore & Ohio, Buffalo, Rochester & Pittsburgh, Central of New Jersey, Delaware & Hudson, Delaware, Lackawanna & Western, Erie (lines east), Lehigh Valley, Maine Central, New York Central (east), New York, Ontario & Western, Pennsylvania R. R., Philadelphia & Reading, Western Maryland, and West Shore. Export rates to Portland via these lines are the same as those applying on domestic traffic.

The following shows the rail rates from points in Maine to Portland, Boston, and New York:

Comparison of first-class freight rates from Maine points.

From—	To Portland, Me., via Maine Central.		To Boston, Mass., via Maine Central and Boston & Maine.		To New York.				
	Distance.	Rate.	Distance.	Rate.	Rail distance.	Via Maine Central, Boston & Maine, New York, New Haven & Hartford.	Same, lighterage points.	Via Maine Central, Boston & Maine, New England Steamship Co.	Via Maine Central, Boston & Maine, Eastern Steamship Lines, lighterage.
	Miles.	*Cents.*	*Miles.*	*Cents.*	*Miles.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Brunswick	28	42½	127	80½	377	101½	101½	101½	99½
Auburn	36	56	145	81½	385	101½	101½	101½	99½
Lewiston	37	56	146	81½	386	101½	101½	101½	99½
Gardiner	56	61½	165	87	405	101½	101½	101½	112
Augusta	63	64	172	88½	412	101½	101½	101½	112
Waterville	82	67½	191	90½	421	101½	101½	101½	112
Rumford	86	69	195	93	435	101½	101½	101½	112
Skowhegan	100	71½	209	94½	449	101½	101½	101½	112
Pittsfield	103	73	212	91	452	101½	101½	101½	112
Bangor	137	80½	246	98½	486	101½	101½	101½	112
Calais	271	102½	380	112	620	137	137	137	138

Comparative freight rates from Maine points.

[In cents per 100 pounds.]

COTTON GOODS.

From—	To Portland, Me., via Maine Central.	To Boston, Mass., via Maine Central, Boston & Maine.	To Boston, Mass., via Maine Central, Eastern Steamship Lines.	To New York, via Maine Central, Boston & Maine, New York, New Haven & Hartford.	To New York, via Maine Central, Boston & Maine, New York, New Haven & Hartford, lighterage.	To New York, via Maine Central, Boston & Maine, Eastern Steamship Lines.	To New York, via Maine Central, Boston & Maine, Eastern Steamship Lines, lighterage.
Brunswick	24½	40½	40½	45½	49	45½	49
Auburn	24½	40½	40½	45½	49	45½	49
Lewiston	24½	40½	40½	45½	49	45½	49
Lisbon			40½			45½	49
Augusta	28½	45½	45½			49½	53
Waterville	28½	45½	45½			49½	53
Rockland	28½	40½					

BOOTS AND SHOES.

Auburn	24½	35½	35½			80½	87
Lewiston	24½	35½	35½			80½	87
Gardiner	28	35½	35½			80½	87
Hallowell	28	35½	35½			80½	87
Augusta	28	35½	35½			90½	87
Skowhegan	35½		42			91	96½
Belfast	28	45				80½	87
Bangor	31	45				80½	87
Calais	35½	45				89½	87

WOOLEN GOODS.

Auburn	31	48½	56½	54½	58	54½	58
Lewiston	31	48½	56½				
Waterville	40½	63	72	66½	70	66½	70
Skowhegan	45½	63	77½	66½	70	66½	70
Pittsfield	45½	63	74	66½	70	66½	70

Comparative rates on paper, etc., from Maine points.

[Rates in cents per 100 pounds.]

To—	From—					
	Brunswick.		Gardiner, Augusta.		Rumford, Skowhegan, Waterville.	
	Carloads.	Less than carloads.	Carloads.	Less than carloads.	Carloads.	Less than carloads.
Portland, Me., via Maine Central [1]	10½	.....	12½	.....	[2] 14½	.....
Portland, Me., via Maine Central, Grand Trunk delivery [3]	.....	.....	.....	.....	[4] 14½	[4] 24½
Boston, Mass., via Maine Central, Boston & Maine [5]	21	.....	21	.....	23	.....
New York, via Maine Central, Boston & Maine, New York, New Haven & Hartford [6]	31	60	32	65	32	65
Same, all lighterage points [6]	35½	65	38½	68½	38½	68½
New York, via Maine Central, Boston & Maine, Eastern Steamship Lines [6]	.....	.....	32	65	32	65
Same, all lighterage points [6]	.....	.....	35½	68½	35½	68½
New York, via Maine Central, Boston & Maine, Central Vermont [5]	34½	.....	35½	.....	35½	.....

[1] Applies on paper, printing, surface coated, toilet, wrapping and bags, paper.
[2] Applies from Rumford and Waterville only.
[3] Applies on paper, printing, toilet, and wrapping.
[4] Applies from Rumford only.
[5] Applies on paper and bags, paper.
[6] Applies on paper, newsprint, wrapping, and writing.

Switching.—The Grand Trunk Railway interchanges with the Portland Terminal Co. at Portland Junction, near Back Cove, and at its yard at the end of Commercial Street, the latter being used mainly for Commercial Street delivery. Carload lots are placed at the various wharves on Commercial Street by both the Grand Trunk and the Portland Terminal Co. The business of the Portland Terminal Co. along Commercial Street is probably 85 per cent of the total. Besides the tracks on the wharves, there are a few tracks leading to warehouses on the land side of Commercial Street, and the Grand Trunk has a second track on a portion of Commercial Street near the produce houses. Cars are placed on this track and fruit and vegetables unloaded directly to the buildings on each side of the street.

Grand Trunk Railway.—Carload traffic on which the Grand Trunk has received or will receive a road haul is entitled to one free switching movement to industries and sidings reached by the Grand Trunk. On traffic on which it does not receive a road haul, the switching charge is 3 cents per 100 pounds, minimum $8.50 per car between points in district south of Portland junction, the same for points in district north of the junction, and 3 cents, minimum $10.50, from points south to points north of the junction. From points south of the junction to Portland Terminal Co. transfer tracks, the charge is 2 cents per 100 pounds, minimum $8.50 per car, and from points

north of the junction to the transfer tracks, it is 2 cents, minimum $8.50 per car. On secondary switching in yards, a charge of $3 per car is made between points in the district south of Portland Junction, $3 between points in the district north of Portland Junction, and $4 from points south to points north of the junction. From points south to Portland Terminal Co. transfer tracks the charge is $3, and from points north to Portland Terminal Co. transfer tracks the charge is $4.

Portland Terminal Co.—Carload traffic on which either the Boston & Maine or the Maine Central has received or will receive a road haul is entitled to one free switching movement to industries and sidings reached by the Portland Terminal Co. Carload shipments from or to points on or via the Grand Trunk or Cumberland County Power & Light Co. are switched to or from wharves and sidings at 35 cents per net ton, minimum charge $8.50 per car. Cars loaded in yards of this company and switched to another part of the yards for unloading bear a charge of 56 cents per net ton, minimum $8.50 per car. Loaded or empty cars on which either the Boston & Maine or the Maine Central has received, or will receive, a road haul are entitled to a secondary switching in the yards for $3 per car. Carload traffic switched to connecting track with the Cumberland County Power & Light Co. bears a rate of 35 cents per ton, minimum $8.50 per car, regardless of point of origin or destination.

Wharfage and handling—*Grand Trunk terminals.*—Wharfage charges are applicable to the following:

(*a*) Traffic received from or delivered to connections at junction points east of Norton Mills, Vt.

(*b*) Traffic regardless of origin or destination upon which the Grand Trunk Railroad has not received road-haul revenue.

On bunker coal and other ships' stores and also on lumber for ships' purposes on which this railroad has received a road-haul revenue handled by ships' agents over wharf or from alongside vessel, for vessel's use on eastbound voyage, there will be no charge.

Wharfage charges at Grand Trunk terminals.

Asbestos fiber and asbestos cement in bags	per net ton..	$0.10
Clay, manganese ore, salt, sulphur (carloads)	do....	.10
Coal (carloads)[1]	do....	.35
Heavy machinery and other freight, 3 net tons or over, per piece or package	per net ton..	.20
Lumber, received by team for lining grain vessels[1]	per M feet..	.50
Commodities other than ballast[2]	per net ton..	.40
Other commodities	do....	.50

[1] Will not be subject to any additional charge, but must be handled by owners.

[2] Applies only on traffic handled over side ocean vessel to or from lighters.

HANDLING.

Clay, manganese ore, salt, sulphur (carloads)	per net ton..	[3] $0. 60
Heavy machinery and other freight weighing 3 net tons or over, per piece or package, including blocking and bracing on cars, actual cost plus 10 per cent.		
Lumber and logs (carloads)	per net ton..	1. 00
Other commodities	do....	.70

Portland Terminal Co.—No charges are made on shipments receiving road-haul on the Boston & Maine or Maine Central Railroads. On merchandise handled over the Portland Terminal Co.'s tracks or connections other than the Maine Central and Boston & Maine Railroads, the following wharfage charges will be assessed and are in addition to switching and handling charges:

Wharfage charges at Portland Terminal Co.

		Cents.
Bleach (carloads)	per net ton..	10
China clay (carloads)	do....	10
Coal (carloads)	per gross ton..	10
Ore (carloads)	do....	10
Sulphur (carloads)	do....	10
Salt (carloads)	do....	12½
All other commodities	per net ton..	20

On merchandise handled over side to lighters by vessels lying at Portland Terminal Co. wharves, one-half of the above charges will be assessed. The loading charges at Portland are absorbed by the Maine Central Railroad on china clay (in packages and in bulk) and on all other freight excepting bulk in cargoes or part cargoes ex-water consigned to points to which joint or local rates from point of shipment are in effect via the Grand Trunk Railroad. Trimming charges on carload shipments to the amount of 15 cents per ton of 2,240 pounds will be absorbed by the Maine Central Railroad on sulphur when destined to points to which the rate in carloads is $1.05 per ton or more. Trimming charges on sulphur in box carloads when received from vessels at Portland Terminal Co. Wharf No. 1 are 25 cents per gross ton.

Cartage.—The tariff of the Boston & Maine Railroad provides that where joint through tariffs are not in effect, freight traffic which is teamed at Portland, Me., from the terminals of the Boston & Maine inward houses, Eastern Steamship Lines, Maine Central Railroad, Maine Steamship Co., Cumberland County Power & Light Co., Grand Trunk Railway, Maine Coast Co., and Portland & Boothbay Steamboat Co., to the terminals of the Boston & Maine Railroad for furtherance beyond, shall be subject to the actual charge for the transfer, not to exceed the rates named below, which shall be paid the teaming company and billed forward on waybills. The tariff of

[3] Will not apply when this system receives road-haul revenue.

the Maine Central Railroad provides for similar charges on import freight only, arriving via Burton Steamship Co., Eastern Steamship Lines, or Grand Trunk Railway when forwarded via Maine Central Railroad.

[In cents per 100 pounds.]

	Maine Central.	Boston & Maine.
Merchandise, not otherwise specified [1]	6	2½
Machinery, set up	12	5
Bulky articles	12	5
Barrels or boxes, empty	12	5
Household goods	12	5

[1] Maine Central tariff provides for a maximum quantity of 2,000 pounds under this rate. Boston & Maine tariff provides for a minimum charge of 25 cents.

Storage.—*Grand Trunk Railroad.*—The Grand Trunk Railroad looks after the storage of export traffic traveling under permits issued by its foreign agent, while the Grand Trunk import tariff provides for the storing of import freight at the carriers' option. The company does not advertise to store freight of this nature during the steamship season. A rate of 15 cents per net ton for 30 days or a fraction thereof applies on asbestos fiber in bags, asbestos cement in bags, bulk manganese ore, salt, and sulphur stored in steamship sheds, but this charge is not made when the Grand Trunk receives road-haul revenue. On other freight in packages (carloads) the rate is 60 cents per net ton for 30 days or a fraction thereof. The tariff of the Grand Trunk Railroad provides that apples, dressed meats, provisions, butter, cheese, eggs, and poultry, when originating at points in Canada or on Grand Trunk lines west or beyond may be stored in transit at Portland for not to exceed nine months if exported from Portland, Me., or Boston, Mass., or forwarded from Portland to Boston for local delivery. Such shipments will be subject to an additional charge of $7 per car.

All traffic through the port of Portland is handled on bills of lading and receives prompt movement. Undelivered or unclaimed freight is held temporarily at local establishments by freight offices of shipping companies for a reasonable time, until agent is satisfied he can not reach owners. When shippers can not be located, unclaimed freight is sold, generally by auction. Coastwise shipping companies send unclaimed freight back to shipper when possible. The charges on such undelivered freight are for storage only when not claimed after 72 hours.

Maine Central Railroad.—Ten days' free time (including Sundays and legal holidays) will be allowed for unloading carload shipments forwarded by water where there are no through rates, viz:

Apples, grain, hay, ore, and vegetables for transshipment to vessels at Portland, Me.

Cottonseed oil in tank cars when barreled and forwarded by lighter.

Demurrage to apply thereafter.

STEAMSHIP LINES.

Large ocean liners run to Portland regularly during the winter season, when the St. Lawrence River is closed to navigation, but no steamers in the foreign trade use this port regularly throughout the year. Tramp steamers make Portland in large numbers and coastwise steamers operate at all seasons. In addition to the coastwise lines listed below, smaller companies operate boats on irregular schedules between Portland and Casco Bay points, Boothbay Harbor, and East Boothbay.

Steamship rates.—There is no uniformity in steamship rates, changes being made from time to time to meet conditions of trade, but in general the rates between the United Kingdom and all North Atlantic ports from Portland to Norfolk are the same, and identical rates apply to Montreal. Charter rates fluctuate in accordance with the demand for carriers.

Agency facilities.—

Names and address of agents.	Lines represented.
Robert Reford Co.	Cunard Line.
198 Middle Street.	Anchor Line.
	Donaldson Line.
	Thompson Line.
	Cairne Line.
Chase-Leavitt & Co.	Furness-Withy & Co.
179 Commercial Street.	Clay Line.
International Mercantile Marine Co.	White Star-Dominion Line.
1 India Street.	

Telephone and telegraph systems.—

Western Union Telegraph Co.

Postal Telegraph Cable Co.

New England Telephone and Telegraph Co.

Transatlantic cables.—None.

Commercial radio stations.—There are none in the vicinity.

Name of line.	(a) Owner. (b) Operator.	Nationality.	Between what points operated.	Location of terminals.	Schedule.	Class of service.	Remarks.
FOREIGN TRADE.							
White Star-Dominion Line.	(a) International Mercantile Marine Co. (b) Same.	American.	To Liverpool and Bristol	Grand Trunk wharves.	Weekly and fortnightly.	Freight and passenger.	Regular sailings.
Clay Line	(a) Various (b) Chase-Leavitt & Co.	...do	From Fowey, England, to Portland, Me.	Portland Terminal Co., Wharf No. 3.	Irregular	China clay	
Cunard Line	(a) Cunard Steamship Co. (b) Robert Reford Co.	British	To Bristol, London, and Southampton.	Grand Trunk wharves.	Fortnightly	Freight and passenger.	Do.
Donaldson Line	(a) Donaldson Bros (b) Robert Reford Co.		To Glasgow.	do	do	do	Do.
Anchor Line	(a) Donaldson Bros (b) Same.	British	do	do	do	do	Do.
Thompson Line	(a) Wm. Thompson (b) Robert Reford Co.	...do	To New Castle, Leith, Aberdeen. Calais, and Mediterranean ports,	do	do	do	Do.
Furness-Withy & Co.	(a) Furness-Withy & Co. (b) Chase-Leavitt & Co.	...do	To Hull	do	Irregular	Freight	Service has been irregular this season; monthly service is planned.
Cairne Line	(a) Cairne Noble & Co. (b) Robert Reford Co.	...do	To Leeds and New Castle	do	Fortnightly	do	Regular sailings.
COASTWISE TRADE.							
Eastern Steamship Lines.	(a) Eastern Steamship Co. (b) Same.	American	From Portland to Boston, from Portland to Rockland; Portland, a port of call for line from Boston to Eastport, Lubec, and St. John.	Franklin Wharf	Daily	Freight and passenger.	Through rate and routing arrangements are in effect on east and west bound traffic; connections are made at terminal with rail and steamship lines.
North Atlantic & Western Steamship Co.	(a) North Atlantic & Western Steamship Co. (b) Same.	...do	Portland to Boston and Philadelphia to Los Angeles, San Francisco, Portland (Oreg.), Seattle and Tacoma (Wash.).	Grand Trunk wharves.	Monthly	Freight	This is a new line operating under arrangements with the U. S. Shipping Board.
Burton Steamship Co.	(a) Burton Steamship Co. (b) Same.	...do	Between Portland and Boston	Customhouse wharf.	Irregular	do	

COMMERCE OF PORTLAND.

IMPORTS.

Fuel oil from Mexico is the principal commodity imported at Portland. This oil is received at private wharves, and is distributed chiefly to local points. No shipments to the interior are reported by the rail lines. Among other significant imports are raw materials for use in the paper industry. The principal items are china clay and pulpwood. The china clay comes chiefly from the United Kingdom and is forwarded to points in Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota and Ontario. The pulpwood comes from Nova Scotia and New Brunswick, and is consigned principally to points on the Maine Central Railroad. Some manganese ore for Canadian points is handled by the Grand Trunk Railway, and some sulphur comes from Mediterranean ports, but the larger part of the sulphur comes from domestic sources.

EXPORTS.

The exports from Portland consist principally of grain from Canada shipped during the winter when the St. Lawrence River is closed to navigation. This grain is forwarded by the Grand Trunk Railway and is shipped chiefly to Liverpool. In 1919, the total amounted to 1,057,912 tons. Portland is also the outlet for other Canadian commerce, and in 1919, the Grand Trunk Railway carried 123,806 tons of miscellaneous merchandise to Portland for shipment abroad. The principal items exported, in addition to grain, were beef, canned goods, cotton and cotton goods, fish, general merchandise, iron, steel and machinery, lumber and cooperage, leather and hides, metals, paper stock and provisions. Live stock was formerly included among the exports, but there have been no shipments of this class for several years.

COASTWISE COMMERCE.

The principal coastwise receipts are coal, sulphur and oil. The coal is for local consumption and for distribution to points on the lines serving the port, and the sulphur is forwarded to points on the Maine Central Railroad, the Bangor & Aroostook Railroad, and also to points in Massachusetts, New Hampshire, Vermont. New Bruns-

wick, Ontario, and Quebec, for use in the paper industry. The principal coastwise shipments are coal, oil and general merchandise. During the last year steamship service has been established between Portland and Pacific coast points, resulting in the development of new business consisting chiefly of receipts of lumber, ties, beans and canned goods, and shipments of paper and canned goods.

The commerce of the port is shown in detail in the following tables:

Water-borne commerce of Portland, Me., 1917–1919.

[Quantities expressed in short tons.]

Classes and commodities.	1917				1918				1919			
	Foreign.		Domestic.		Foreign.		Domestic.		Foreign.		Domestic.	
	Imports.	Exports.	Receipts.	Shipments.	Imports.	Exports.	Receipts.	Shipments.	Imports.	Exports.	Receipts.	Shipments.
Animals and animal products:												
Horses		7,274				1,525						
Fish	577	1,467	17,274		342		18,977		1,571	718	10,929	3,188
Beef						54,362				47,380	364	626
Leather and hides									2	1,649	363	126
Glue stock												440
Cheese						1,140						
Vegetable food products and beverages:												
Grain and flour		394,477		[1] 9,538		793,730		6,549		1,057,912	363	2,071
Hay		1,946								11		
Apples		821				754				14,674		870
Molasses and sugar					1,850				557	276	909	
Tea									3			
Provisions		47,261		5,261						11,412	1,776	
Liquors					1,002				313	21		
Other vegetable products:												
Rubber goods										262		
Textiles:												
Cotton and cotton goods		896				162			536	257		
Waste									27			
Wood and paper:												
Paper and rags							100					
Paper and paper stock	165	696								2,019		
Wood products	16,289	8,757										
Lumber and cooperage			6,900	4,050	257	16,255	27,248	347	304	23,399	809	3,050
Pulp wood	21,490				22,690				41,507			
Nonmetallic minerals:												
China clay	34,209	413			23,358				32,974			
Brick and clay					2,860		2,600	45	[2] 227		[2] 25	
Clay			8,340								234	
Bituminous coal	23,852		987,312	2,300	10,769		1,452,096	1,564			840,247	156,173
Anthracite coal			493,405	4,700			159,138	240			124,654	840
Salt	3,181		280		4,800		30		6,070		45	
Lime and cement			355	1,500			791	2,135			550	
Fullers earth									156			

Paving stones			2,400								11,764	
Stone and sand			[3] 765				90				66,000	
Sulphur			82,914				30,402					
Asphalt										1		
Grindstones	35								55			
Oil	111,140	1,760	190,857		199,975	6,671	96,464	10,652	73,497	1,987	60,000	6,500
Lubricating oil									220			
Ores and metals:												
Ores	2,196	19		56,000	2,592			60,191	3,500			
Metals										1,449		
Aluminum		1,050										
Copper and brass		3,585										
Iron, steel, and machinery	15	51,330	1,483		1,673	31,506			572	6,182	495	375
Machinery and vehicles:												
Automobiles										25		
Chemicals:												
Fertilizer			1,961				238	1,000				
Soda									95			
Unclassified:												
General merchandise	35	12,534	138,773	138,772	8,371	6,081	45,802	26,089	4,045	2,707	11,211	13,134
Canned goods		2,406	412			2,389	250			11,627	1,155	1,877
War supplies									100			
Containers												149
Total	213,184	536,692	1,933,431	222,121	280,539	914,575	1,834,226	108,812	166,337	1,183,968	1,131,893	189,413

[1] Grain only. [2] Brick only. [3] Stone only.

Water-borne commerce of Portland, Me., 1910–1916.[1]

[Quantities expressed in short tons.]

Classes and commodities.	1910	1911	1912	1913	1914	1915	1916
Animals and animal products except wool hair:							
Cattle on hoof and beef	6,928	10,489	2,983	20,014	10,304	6,065	48,570
Horses and mules	.....	.....	.....	.....	826	.....	15,522
Leather and hides	4,340	5,579	1,133	921	973	3,676	1,026
Dairy products (cheese)	.....	.....	.....	.....	1,908	.....	.....
Vegetable food products and beverages:							
Grain, flour, hay and straw	191,329	203,506	289,907	414,398	305,286	465,766	1,136,590
Provisions	24,962	71,389	39,422	27,346	14,692	48,835	9,720
Fish and lobsters	19,139	35,130	19,001	15,076	13,451	17,677	18,662
Apples	12,659	10,932	17,717	14,737	15,082	11,536	2,038
Molasses and sugar	14,075	36,561	200	544	1,188	.....	.....
Potatoes	.....	10,838	8,000	.....	.....	.....	.....
Textiles:							
Cotton and cotton goods	11,791	72,374	2,273	.....	812	1,335	1,067
Wood and paper:							
Lumber and cooperage	79,352	60,370	52,701	48,533	31,755	43,639	85,456
Pulp and pulp wood	84,272	126,311	147,550	122,088	132,577	97,978	26,940
Paper and rags	45,391	80,045	7,994	7,172	8,564	3,171	2,625
Wood	.....	75,000	5,000	10	.....	.....	.....
Nonmetallic minerals:							
Bituminous coal	1,656,487	1,191,432	521,137	1,718,096	1,331,880	1,151,822	1,120,000
Anthracite coal	.....	511,808	1,330,894	339,000	330,000	368,751	391,368
Oil and oil cakes	65,727	37,076	40,871	30,094	35,954	103,683	197,860
Cement, lime, brick, and clay	42,777	59,155	27,930	34,004	35,604	12,604	14,041
China clay	32,689	.....	31,576	38,336	37,523	34,811	44,329
Sulphur	49,395	51,247	57,318	61,815	55,133	58,773	114,626
Sand and stone	11,115	16,594	12,356	19,294	2,020	5,832	1,360
Salt	9,413	8,581	6,800	10,937	10,332	7,728	5,158
Asbestos, fiber	.....	.....	.....	.....	.....	4,903	1,792
Ores and metals:							
Ores	5,181	.....	38,298	15,517	81,177	93,898	90,061
Iron, steel and machinery	46,255	23,816	38,454	10,442	4,698	3,834	15,975
Copper and brass	.....	.....	.....	.....	.....	.....	1,045
Aluminum	.....	.....	.....	.....	.....	.....	88
Machinery and vehicles:							
Automobiles	.....	.....	.....	.....	.....	.....	362
Chemicals:							
Bleaching powder	.....	.....	.....	.....	825	.....	.....
Soda ash	.....	.....	.....	.....	1,900	.....	.....
Fertilizer	.....	1,976	2,500	3,695	1,514	1,200	2,279
Unclassified:							
General merchandise	460,030	434,535	557,491	386,916	330,024	439,316	385,239
Canned goods	16,096	27,280	443	553	1,758	3,243	4,275
Total	2,889,403	3,162,024	3,259,949	3,339,538	2,797,760	2,990,076	3,738,074

[1] Commerce not segregated into foreign and domestic for these years.

Summary of water-borne commerce of Portland, Me., by classes.

[Quantities expressed in short tons.]

	Animals and animal products except wool and hair.	Vegetable food products and beverages.	Other vegetable products.	Textiles.	Wood and paper.	Non-metallic minerals.	Ores and metals.	Machinery and vehicles.	Chemicals.	Unclassified.	Total.
Total commerce:											
1910	11,268	262,164	.....	11,791	209,015	1,867,603	51,436	.....	.....	476,126	2,889,403
1911	16,068	358,356	.....	72,374	341,726	1,875,893	23,816	.....	1,976	461,815	3,162,024
1912	4,116	374,247	.....	2,273	213,245	2,028,882	76,752	.....	2,500	557,934	3,259,949
1913	20,935	472,101	.....	.....	177,803	2,251,576	25,959	.....	3,695	387,469	3,339,538
1914	14,011	349,699	.....	812	172,896	1,838,446	85,875	.....	4,239	331,782	2,797,760
1915	9,741	543,814	.....	1,335	144,789	1,748,907	97,732	.....	1,200	442,559	2,990,076
1916	65,118	1,167,010	.....	1,067	115,021	1,890,534	107,169	362	2,279	389,514	3,738,074
1917	26,592	459,304	.....	.....	58,347	1,949,718	115,678	.....	1,961	293,932	2,905,428
1918	76,346	803,395	.....	162	66,897	2,004,680	95,962	.....	1,238	88,982	3,138,152
1919	67,350	1,091,168	262	820	71,088	1,382,219	12,573	25	95	46,005	2,671,605
Foreign:											
Imports—											
1917	577	.....	.....	.....	37,944	172,417	2,211	.....	.....	35	213,184
1918	342	2,852	.....	.....	22,947	241,762	4,265	.....	.....	8,371	280,539
1919	1,573	873	.....	563	41,811	113,199	4,072	.....	95	4,145	166,331
Exports—											
1917	8,741	444,505	.....	896	9,453	2,173	55,984	.....	.....	14,940	536,692
1918	57,027	794,484	.....	162	16,255	6,671	31,506	.....	.....	8,470	914,575
1919	49,747	1,084,306	262	257	25,418	1,988	7,631	25	.....	14,334	1,183,968
Domestic:											
Receipts—											
1917	17,274	.....	.....	.....	6,900	1,766,628	1,483	.....	1,961	139,185	1,933,431
1918	18,977	.....	.....	.....	27,348	1,741,611	.....	.....	238	46,052	1,834,226
1919	11,656	3,048	.....	.....	809	1,103,519	495	.....	.....	12,366	1,131,893
Shipments—											
1917	.....	14,799	.....	.....	4,050	8,500	56,000	.....	.....	138,772	222,121
1918	.....	6,549	.....	.....	347	14,636	60,191	.....	1,000	26,089	108,812
1919	4,374	2,941	.....	.....	3,050	163,513	375	.....	.....	15,160	189,413

Summary of water-borne commerce at Portland, Me., by years.[1]

[Quantities expressed in short tons.]

Year.	Foreign.			Domestic.			Grand total.
	Imports.	Exports.	Total.	Receipts.	Shipments.	Total.	
1891							1,368,237
1892							1,376,811
1893							1,432,808
1894							1,214,887
1895							1,339,064
1896							1,357,578
1897							1,326,844
1898							1,334,752
1899							1,620,284
1900							2,261,008
1901							2,461,515
1902							2,224,091
1903							2,312,457
1904							2,233,475
1905							2,576,403
1906							2,546,625
1907							(2)
1908							2,932,517
1909							2,950,011
1910							2,889,403
1911							3,162,024
1912							3,259,949
1913							3,339,538
1914							2,797,760
1915							2,990,076
1916							3,738,074
1917	231,964	536,692	768,656	1,970,651	166,121	2,136,772	2,905,428
1918	257,849	914,575	1,172,424	1,856,916	108,812	1,965,728	3,138,152
1919	166,331	1,183,968	1,350,299	1,131,893	189,413	1,321,306	2,671,605

[1] Commerce not segregated into foreign and domestic prior to 1917.
[2] No statistics available.

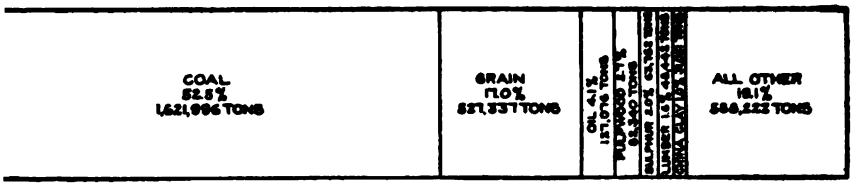
Principal commodities received and shipped by water at Portland.

Year.	Coal.		Oil.		Grain.		Pulp wood and wood pulp.	
	Short tons.	Per cent of total.	Short tons.	Per cent of total.	Short tons.	Per cent of total.	Short tons.	Per cent of total.
1910	1,656,487	57.3	65,727	2.3	191,329	6.6	84,272	2.9
1911	1,703,240	53.9	37,076	1.2	203,506	6.4	126,311	4.0
1912	1,852,031	56.8	40,871	1.3	289,907	8.9	147,550	4.5
1913	2,057,096	61.6	30,094	0.9	414,398	12.4	122,088	3.6
1914	1,661,880	59.4	35,954	1.3	305,286	10.9	132,577	4.7
1915	1,520,573	50.8	103,683	3.5	465,766	15.6	97,978	3.3
1916	1,511,368	40.4	197,860	5.3	1,136,590	30.4	26,940	0.7
1917	1,511,569	52.1	303,757	10.5	405,961	13.9	21,490	0.7
1918	1,623,807	51.7	313,762	10.0	800,279	25.5	22,690	0.7
1919	1,121,914	42.0	141,984	5.3	1,060,357	39.7	41,507	1.6

Year.	China clay.		Sulphur.		Lumber and cooperage.		All other.	
	Short tons.	Per cent of total.	Short tons.	Per cent of total.	Short tons.	Per cent of total.	Short tons.	Per cent of total.
1910	32,689	1.1	49,395	1.7	79,352	2.8	730,152	25.3
1911	(1)	.....	51,247	1.6	60,370	1.9	980,274	31.0
1912	31,576	1.0	57,318	1.7	52,701	1.6	787,995	24.2
1913	38,336	1.1	61,815	1.9	48,533	1.5	567,178	17.0
1914	37,523	1.3	55,133	2.0	31,755	1.1	537,652	19.3
1915	34,811	1.2	58,773	2.0	43,639	1.4	664,853	22.2
1916	44,329	1.2	114,626	3.1	85,456	2.3	620,905	16.6
1917	34,622	1.2	82,914	2.8	10,950	0.4	534,165	18.4
1918	23,358	0.8	30,402	1.0	44,107	1.4	279,747	8.9
1919	32,974	1.2	66,000	2.5	27,562	1.0	179,307	6.7

[1] China clay included under bricks and clay.

AVERAGE ANNUAL COMMERCE AT PORTLAND, ME. DURING PERIOD 1910-1919



Number of vessels docking at Portland each year, 1905 to 1919, inclusive.

Year.	Steamships.		Sailing vessels.		Barges.
	Foreign.	Coastwise.	Foreign.	Coastwise.	
1905	294	5,653	128	650	84
1906	143	3,048	.....	4,195	54
1907	304	17,052	150	5,542	132
1908	230	14,150	.....	7,971	268
1909	526	14,031	272	6,838	294
1910	428	10,936	152	6,604	32
1911	646	5,966	120	9,960	409
1912	446	13,605	69	6,526	318
1913[1]	.....	.....	.....	.....	.....
1914	340	25,748	188	812	406
1915	440	32,532	130	228	432
1916	633	17,984	76	240	10
1917	289	15,388	79	1,175	8
1918	133	5,010	7	2,387	[2] 524
1919	195	3,788	.....	1,731	[2] 380

[1] The figures available for 1913 are not regarded as reliable and have therefore been omitted.
[2] Includes tugs.

Arrivals and departures of vessels.

CALENDAR YEAR 1917.

Steamers:	
Foreign—	
Draft from 19 to 33 feet	287
Draft about 16 feet	2
Coastwise—	
Draft from 16 to 18 feet	1,232
Draft from 9 to 15 feet	14,156
Sailing vessels:	
Foreign—	
Draft from 16 to 18 feet	79
Coastwise—	
Draft from 12 to 15 feet	36
Draft from 6 to 10 feet	1,139
Barges:	
Average draft 20 feet	8
229 small fishing boats averaging 4 round trips per week, draft from 3 to 5 feet.	
A ferry boat running from Portland to South Portland made 29 round trips per day for 300 days during calendar year 1917.	
Passengers arriving and departing by water	762,710

CALENDAR YEAR 1918.

Steamers:	
Foreign—	
Draft from 30 to 34 feet	7
Draft from 25 to 29 feet	85
Draft from 20 to 24 feet	25
Draft from 15 to 19 feet	16

Steamers—Continued.	
Coastwise—	
Draft from 25 to 29 feet	20
Draft from 20 to 24 feet	238
Draft from 15 to 19 feet	146
Draft from 10 to 14 feet	79
Draft under 10 feet	1,003
Sailing vessels:	
Foreign—	
Draft from 15 to 19 feet	4
Draft from 10 to 14 feet	3
Coastwise—	
Draft from 25 to 29 feet	6
Draft from 20 to 24 feet	15
Draft from 15 to 19 feet	111
Draft from 10 to 14 feet	1,208
Draft under 10 feet	1,047
Barges and tugs:	
Coastwise—	
Draft from 20 to 24 feet	12
Draft from 15 to 19 feet	409
Draft from 10 to 14 feet	103
Casco Bay steamers:	
Average draft 9 feet	2,100
Quartermaster Department steamers:	
Average draft 12 feet	1,424
Passengers arriving and departing by water	779,773

CALENDAR YEAR 1919.

Steamers:	
Foreign—	
Draft from 30 to 34 feet	7
Draft from 25 to 29 feet	86
Draft from 20 to 24 feet	98
Draft from 15 to 19 feet	4
Coastwise—	
Draft from 25 to 29 feet	16
Draft from 20 to 24 feet	129
Draft from 15 to 19 feet	150
Draft from 10 to 14 feet	67
Draft under 10 feet	1,352
Sailing vessels:	
Coastwise—	
Draft from 20 to 24 feet	5
Draft from 15 to 19 feet	64
Draft from 10 to 14 feet	898
Draft under 10 feet	764
Barges and tugs:	
Coastwise—	
Draft from 20 to 24 feet	2
Draft from 15 to 19 feet	313
Draft from 10 to 14 feet	74
Casco Bay steamers:	
Average draft 9 feet	650
Quartermaster Department steamers:	
Average draft 12 feet	1,424
Passengers arriving and departing by water	740,486
Ferris-type wooden steamers, built during 1919	5
Steam trawlers, built during 1919	2
Steam lighter, built during 1919	1
4-masted schooner, built during 1919	1

High water rates caused a reduction in coastwise traffic and a resort to rail, but since the rail rates were recently increased there is a well-defined tendency to resume coastwise traffic.

THE TERRITORY TRIBUTARY TO PORTLAND.

The commerce of Portland is due largely to its favorable position as a winter outlet for Canadian grain carried by the Grand Trunk Railway. The chief primary markets for Canadian grain are Port Arthur and Fort William, Ont., which are on the north shore of Lake Superior, and about 99 per cent of the export grain of western Canada is forwarded from these points. During the season of navigation on the Great Lakes the grain is shipped largely by vessel to Buffalo, Georgian Bay ports, and Montreal. The export grain received at Buffalo goes by rail to Atlantic ports, principally New York. At Montreal the Canadian Government has provided extensive terminals, including an elevator system of large capacity, and this port now ranks second in the exportation of grain from the American continent. Owing to the lower rate by water, grain from Port Arthur and Fort William is rushed to Montreal and Buffalo during the navigation season. There is an increasing tendency to use the all-water route to Montreal as being more economical than the joint lake-rail route through Buffalo to the Atlantic seaboard.

After the close of navigation export grain from the Canadian northwest moves by rail from Port Arthur, Fort William, and Georgian Bay ports, reaching the sea at St. John, Halifax, Portland, Boston, and New York. St. John is the ocean terminus of the Canadian Pacific Railway, which affords direct transportation from Port Arthur and Fort William; Halifax is the terminus of the Intercolonial Railway; and Portland is the winter port of the Grand Trunk Railway, which serves the Georgian Bay ports. All of these lines pass through Montreal, and the distances from this point are as follows:

	Miles.
Montreal to Halifax	758
Montreal to St. John	483
Montreal to Portland	297
Montreal to Boston	330
Montreal to New York	387

While Portland has an advantage because of the lesser rail distance from Montreal, the competition in rates and service is sufficiently keen to make it necessary for Portland to exercise foresight in providing ample facilities for the economical handling of business. Important terminal projects have been adopted at both St. John and Halifax, and the railroad and steamship lines of Canada are heavily subsidized. The territory in Canada tributary to Portland is approximately shown on the accompanying sketch.

With the exception of the Grand Trunk Railway, th
rail lines from the West which have overseas terminals at
and there is no great export movement through Portland
great productive areas of the central western States. Po
however, the terminus of the Maine Central Railroad, whic
the principal cities in Maine and has a considerable loc
There is little or no export traffic over this road, but there
stantial import movement of bulk commodities, such as p
china clay, and sulphur, which are distributed to the paper
of Maine. The destination of the pulp wood is chiefly within
of Maine, but the china clay is distributed through a muc
area, and some of it reaches the paper industries of Michi
consin, and Minnesota. Coal is distributed from Portland
tically all points in the State of Maine, and to parts of New
shire, Vermont, and Nova Scotia, but the distribution is li
some localities to the winter season, when nearer ports are c
ice. This is true of points in the vicinity of Bangor.

The geographical position of Portland as an outlet for t
traffic flowing from the production centers of the country
seaboard will be apparent from the following table:

Distances from important interior shipping centers, in statute miles.

	Portland.	Boston.	New York.	Philadelphia.
St. Louis	1,326	1,217	1,053	961
Chicago	1,142	1,033	909	817
Cincinnati	1,052	943	751	660
Cleveland	790	681	579	487
Pittsburgh	782	673	441	349
Buffalo	607	498	306	416

Portland possesses some advantage by reason of being the
States port nearest to the United Kingdom and Europe, but
not reflected in steamship rates at the present time. Neverth
the actual cost of operating a vessel between Portland and E
is less than between more southerly ports, and having in min
necessity of accomplishing all possible economies in order to
favorable operating conditions for our merchant marine, Por
must be regarded as the logical port for commerce betwee
United Kingdom and Europe and all inland points of the U
States to which it affords the shortest rail haul. The follo
shows the distances in nautical miles from Portland to impo
foreign ports:

T THE PORT OF
, ME.

OVED

C. Keller

CORPS OF ENGINEERS, U.S. ARMY.

TRANSMITTED WITH REPORT
DATED APRIL 1, 1921

48534°—21. (To follow page 60.)

	Portland.	Boston.	New York.	Philadelphia.	Baltimore.
s Aires, Argentina	5,873	5,842	5,871	5,918	5,745
, Canal Zone	2,198	2,157	1,974	1,946	1,901
a, Cuba (outside)	1,456	1,415	1,186	1,156	1,107
mbuco, Brazil	3,700	3,669	3,698	3,745	3,772
pool (winter route)	2,885	2,928	3,107	3,250	3,398
n (winter route)	3,119	3,162	3,341	3,484	3,627
ar (winter route)	2,985	3,028	3,207	3,350	3,490
a (via Suez Canal)	11,340	11,383	11,540	11,705	11,845
a (via Panama Canal)	11,764	11,723	11,562	11,512	11,467

Portland is the nearest American port to all European points and North Atlantic port nearest to Manila by way of Suez. It is at a advantage in trade with the West Indies, but is practically the e distance as New York from the east coast of South America.

rigin and destination of principal items of commerce at Portland, Me., in 1919.

Item.	Tons.	Origin.	Railroad by which shipped.	Destination.
bound:				
Grain	1,057,912	Chiefly Port Arthur, Fort William, and Georgian Bay ports, Canada; some from Chicago.	Grand Trunk and Grand Trunk Western.	United Kingdom and Europe, principally Liverpool.
General package freight, including beef, canned goods, iron and steel, leather and hides, lumber and cooperage, provisions, etc.	123,806	110,771 tons Canadian, 13,035 tons American.	.....do.....	London, Liverpool, Bristol, Southampton, Glasgow, Newcastle, Leith, Aberdeen, Calais and Mediterranean ports; the greater part went to points in the United Kingdom.
ound:				
China clay	32,974	United Kingdom..	Maine Central.....	Points in Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, and Ontario.
Do	6,000	.....do.....	Grand Trunk.....	Western United States points.
Sulphur	60,156	Louisiana and Texas.	Maine Central.....	Points on Maine Central R. R., Bangor and Aroostook R. R.; also points in Massachusetts, New Hampshire, Vermont, New Brunswick, Ontario, and Quebec.
Do	16,000	.....do.....	Grand Trunk.....	Destined chiefly to Canadian points; some sulphur is received from Mediterranean ports.
Manganese ore	3,000	.....	.....do.....	Canadian points.
Coal	266,096	Domestic ports....	Maine Central.....	Maine Central R. R.
Do	1,485	.....do.....	Boston & Maine...	Boston & Maine R. R.
Coal, commercial.	215,517	.....do.....	Maine Central.....	Cumberland Mills, Brownville Junction, McAdam Junction, Me., and industries along railroad.
Do	11,591	.....do.....	Boston & Maine...	Biddeford, Sanford and Springdale, Me.
Pulpwood	41,289	Nova Scotia and New Brunswick.	Maine Central.....	Paper industries on Maine Central R. R.

to the territory for which it is the logical gateway. When the needed facilities have been provided, the cooperation of the producers and manufacturers within the territory to be benefited should be sought, with a view to securing the routing of traffic through Portland in sufficient volume to attract vessels to the port throughout the year.

List of terminals at Portland, Me.

Reference No. on map.	Name of terminal.
1.	Portland Co. wharf.
2.	New wharf, Grand Trunk Railway.
3.	Ocean wharf, Grand Trunk Railway.
4.	Atlantic Wharf, Grand Trunk Railway.
5.	Galt Wharf, Grand Trunk Railway. } Site for State Pier.
6.	Franklin Wharf. }
7.	Burnhams Wharf.
8.	Randall & McAllister wharf.
9.	Customhouse wharf.
10.	Portland Pier.
11.	Commercial Wharf.
12.	Long Wharf.
13.	Central Wharf.
14.	Widgery Wharf.
15.	Union Wharf.
16.	Merrills Wharf.
17.	Richardson Wharf.
18.	Merchants Wharf.
19.	Browns Wharf.
20.	Greeley Wharf.
21.	Portland Terminal Co. wharf (old B. & M. Ry.)
22.	Hobson Wharf.
23.	Berlin Mills Wharf.
24.	Holyoke Wharf.
25.	Sturdivant Wharf.
26.	Deake Wharf.
27.	Portland Terminal Co. Wharf No. 1.
28.	Portland Terminal Co. Wharf No. 2.
29.	Portland Terminal Co. Wharf No. 3.
30.	Portland Terminal Co. Wharf No. 4.
31.	Rolling Mill Wharf.
32.	Standard Oil Co.
33.	Mexican Petroleum Co.
34.	Texas Co.
35.	Bennett Wharf.
36.	Marine Railway wharves.
37.	Spears coal wharf.
38.	Ferry landing.
39.	Whidden Wharf.
40.	Grand Trunk coal wharf.
41.	Russell Shipbuilding Co. wharf.
42.	Burnham-Morrill Wharf.
43.	Cash Fuel Co. wharf.
44.	Cumberland County Light & Power Co.
45.	Deering Coal & Wood Co.
46.	Winslow & Co. wharf.
47.	City of Portland.

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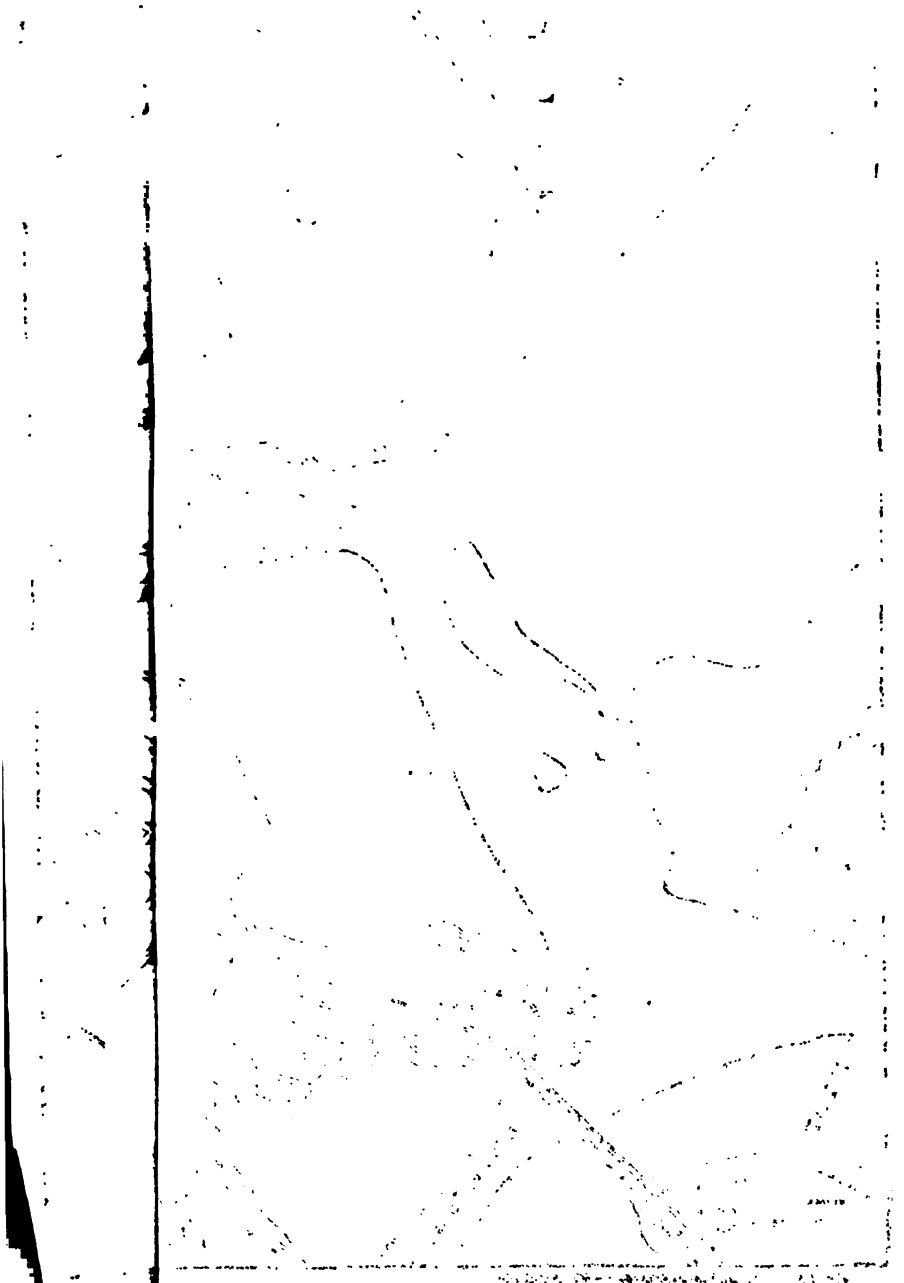
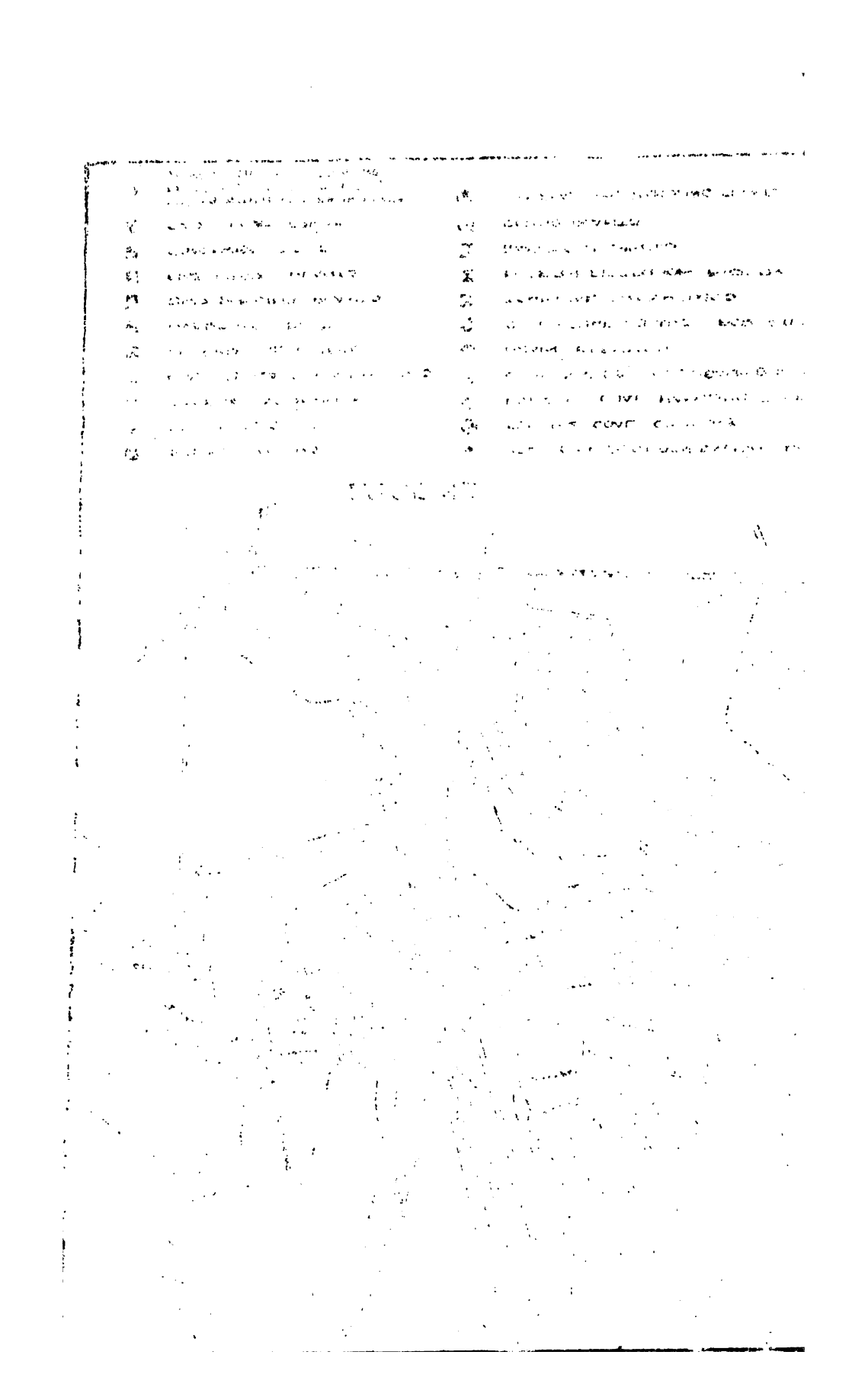


SUBMITTED
F. J. Clarke
CAPTAIN, C.E.C., U.S.N.

APPROVED
Chas. Keller
Col. CORPS OF ENGINEERS

DRAWN BY O.R.V.

TRANSMITTED WITH REPORT
DATED APRIL 1, 1921



Binder
Gaylord Bros. Inc.
Makers
Syracuse, N. Y.
PAT. JAN 21, 1908

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1921